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ABSTRACTS

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This publication is furnished as an added service to subscribers to the *Textile Research Journal*. The Abstracts herein constitute a comprehensive review of the current journal literature of the world with respect to science, research, and development within the fields of textile interest. Abstracts of U.S. and British patents are also included.

The publication is prepared in Great Britain and appears as a part of the *Journal of the Textile Institute*, Manchester, England. It is also bound separately and mailed direct to all *Textile Research Journal* subscribers.

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THE JOURNAL OF THE
TEXTILE INSTITUTE

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SOURCE OF ABSTRACTS

The source of each abstract is indicated by the letter following it.

C = British Cotton Industry Research Association.
W = Wool Industries Research Association.
L = Linen Industries Research Association.
La = British Launderers Research Association.
H = Hosiery and Allied Trades Research Association.

LIST OF JOURNALS FROM WHICH ARTICLES ARE FREQUENTLY ABSTRACTED

Journal	Abbreviations
Acta Chemica Scandinavica	*Acta chem. scand.*
Acta Crystallographica	*Acta crystall.*
Actas Dermo-sifilográficas ((thro' British Journal of Industrial Medicine)	*Actas dermo-sif.*
Advancement of Science	*Adv. Sci.*
Afinidad (thro' Brit. Chem. Abstr.)	*Afinidad*
Agricultural Economics Research	*Agric. Econ. Res.*
Agricultural Gazette New South Wales	*Agric. Gaz. N.S. Wales*
Alphomega	*Alphomega*
American Dyestuff Reporter	*Amer. Dyest. Rep.*
American Journal of Botany (thro' Amer. Chem. Abstr.)	*Amer. J. Bot.*
American Society for Testing Materials Bulletin	*Bull. A.S.T.M.*
American Wool & Cotton Report	*Amer. Wool & Cotton Rep.*
Analyst	*Analyst*
Analytica Chimica Acta	*Analyt. Chim. Acta*
Analytical Chemistry	*Analyt. Chem.*
Annalen der Physik	*Ann. Phys.*
Annales textiles	*Ann. text.*
Annals of Applied Biology	*Ann. Appl. Biol.*
Annals of Botany	*Ann. Bot.*
Annals of Eugenics	*Ann. Eugenics*
Annals of Mathematical Statistics	*Ann. Math. Stat.*
Animal Breeding Abstracts	*Animal Breeding Abstr.*
Applied Mechanics Reviews	*Appl. Mech. Rev.*
Applied Scientific Research. Series A and B.	*Appl. Sci. Res.*
Atmospheric Pollution Abstracts. D.S.I.R.	*Atm. Poll. Abstr.*
Bibliography of Agriculture	*Bibl. Agric.*
Biochemical Journal	*Biochem. J.*
Biochimica et Biophysica Acta	*Biochim. Biophys. Acta*
Biometrika	*Biometrika*
Board of Trade Journal	*Board of Trade J.*
Boletin Mensual del Algodon (Argentina)	*Bol. mens. Algodon Argentina*
British Chemical Abstracts, Sections A, B, C.	*Brit. Chem. Abstr.*
British Coal Utilisation Research Association Bulletin	*Bull. Brit. Coal Util. R A.*
Ditto Gazette	*Gaz. Brit. Coal Util. R. A.*
British Gelatine and Glue Research Association. Abstracts and Bulletin	*Abstr. (Bull.) Brit. Gel. Glue R. A.*
British Hat and Allied Feltmakers Research Association. Bulletin	*Bull. Brit. Hat All. Feltm. R. A.*
British Journal of Applied Physics	*Brit. J. Appl. Phys*
British Journal of Industrial Medicine	*Brit. J. Industr. Med.*
British Journal of Photography	*Brit. J. Photogr.*
British Machine Tool Engineering	*Brit. Mach. Tool Engng*
British Management Review	*Brit. Management Rev.*
British Plastics	*Brit. Plastics*
British Rayon and Silk Journal	*Brit. Rayon & Silk J.*
British Shipbuilding Research Association. Journal	*J. Brit. Shipbldg R. A.*
British Thomson Houston Research Laboratory. Reports	*B.T.H. Res. Lab. Rep.*
Brown Boverie Review	*Brown Boverie Rev.*
Building Science Abstracts	*Building Sci. Abstr.*
Bulletin of British Non-Ferrous Metals Research Association	*Bull. Brit. non-Ferr. Metals R. A.*
Bulletin of the British Scientific Instrument Research Association	*Bull. Brit. Sci. Instr. R.A.*

Journal	Abbreviations
Bulletin of Hygiene	*Bull. Hyg.*
Bulletin of the Imperial Institute, London	*Bull. Imp. Inst., London*
Bulletin de l'Institut Textile de France	*Bull. Inst. Text. France*
Bulletin of the National Association of Wool Manufacturers	*Bull. Nat. Ass. Wool Mfrs*
Bulletin Oerlikon	*Bull. Oerlikon*
Bulletin de la Société chimique de France	*Bull. Soc. chim. Fr.*
Bulletin de la Société chimique des Belges	*Bull. Soc. chim. Belges*
Bulletin des Soies et Soieries	*Bull. Soies Soieries*
Bulletin of the Wool Industries Research Association	*Bull. Wool Industr. R.A.*
Canadian Journal of Research. Series B, F,	*Canad. J. Res.*
Ditto Series A, C, D, E	*Canad. J. Res.*
Canadian Textile Journal	*Canad. Text. J.*
Cereal Chemistry	*Cereal Chem.*
Chemical Abstracts	*Amer. Chem. Abstr.*
Chemical Engineering Progress	*Chem. Engng. Progress*
Chemical Products	*Chem. Prod.*
Chemical Reviews	*Chem. Rev.*
Chemie und Technik (thro' Amer. Chem. Abstr.)	*Chem. Tech.*
Chemistry and Industry	*Chem. & Ind.*
Chimie et Industrie	*Chim. et Industr.*
Ciba Review	*Ciba Rev.*
Ciba Rundschau	*Ciba Rdsch.*
The Cobbler	*Cobbler*
Colonial Plant and Animal Products	*Col. Plant & Animal Prod.*
Compte rendu de l'Académie des Sciences de l'U.R.S.S.	*C.R. Acad. Sci. U.R.S.S.*
Coton et Fibres Tropicales	*Coton Fibres Trop.*
Cotton (Manchester)	*Cotton, Mchr*
Cotton Board Trade Letter	*Cotton Bd. Tr. Letter*
Ditto Statistical Supplement	*Cotton Bd. Tr. Letter. Stat. Suppl.*
Cotton Trade Journal Weekly Newspaper	*Cotton Tr. J. Whly*
Countryman (Cyprus)	*Countryman (Cyprus)*
Current Science (India)	*Cur. Sci. India*
Current Science (India) (thro' Amer. Chem. Abstr.)	
Danish Institute for Textile Research	*Danish Inst. Text. Res.*
Discovery	*Discovery*
Distaff	*Distaff*
D.S.I.R. Monthly Summary	*D.S.I.R. Mthly Summary*
Dyer	*Dyer*
Economist	*Economist*
Econometrica	*Econometrica*
Egyptian Cotton Gazette	*Egypt Cotton Gaz.*
Electrical Review	*Elect. Rev.*
Electronic Engineering	*Electronic Engng*
Elektrochemie (thro' Amer. Chem. Abstr.)	*Elektrochemie*
Empire Cotton Growing Review	*Emp. Cotton Growing Rev.*
Empire Journal of Experimental Agriculture	*Emp. J. Exp. Agric.*
Endeavour	*Endeavour*
Engineer	*Engineer*
Engineering	*Engineering*
Experientia	*Experientia*
Farming in S. Africa	*Fmg in S. Africa*
Fibres	*Fibres*
Fibres, Fabrics and Cordage	*Fibres Fabrics & Cordage*
Frontier	*Frontier*
Fuel Abstracts, D.S.I.R.	*Fuel Abstr.*
Functional Photography	*Funct. Photogr.*
General Electric Review	*Gen. Elec. Rev.*
General Electric Co. Ltd., Journal	*J. Gen. Elect. Co.*
Genetics (thro' Plant Breeders' Abstr.)	*Genetics*
Geographical Review (thro' Bull. Hyg.)	*Geo. Rev.*

Journal	Abbreviations
Helvetica Chimica Acta	*Helv. chim. Acta*
Hosiery Abstracts	*Hosiery Abstr.*
Hosiery Industry Weekly	*Hosiery Ind. Wkly*
Hosiery Research Bulletin	*Hosiery Res. Bull.*
Hosiery Times	*Hosiery Times*
Hosiery Trade Journal	*Hosiery Trade J.*
Hosiery and Underwear Review	*Hosiery & Underwear Rev.*
India Rubber Journal	*India Rubber J.*
Indian Farming	*Indian Fmg.*
Indian Journal of Agricultural Science	*Indian J. Agric. Sci.*
Indian Textile Journal	*Indian Text. J.*
Industrial Accident Prevention Bulletin	*Industr. Acc. Prev. Bull.*
Industrial and Engineering Chemistry	*Ind. Engng Chem.*
Industrial Chemist and Chemical Manufacturer	*Industr. Chem.*
Industria Textil	*Industria text.*
Industrie Textile	*Industrie text.*
Instrument Practice	*Instrum. Pract.*
Instruments	*Instruments*
Interchemical Review	*Interchem. Rev.*
International Cotton Bulletin	*Internat. Cotton Bull.*
Iowa State College Journal of Science	*Iowa St. Coll. J. Sci.*
Journal of the Acoustical Society of America	*J. Acoust. Soc. Amer.*
Journal of the American Chemical Society	*J. Amer. Chem. Soc.*
Journal of the American Leather Chemical Society	*J. Amer. Leather Chem. Soc.*
Journal of the American Society of Agronomy (thro' Plant Breeding Abstr.)	*J. Amer. Soc. Agron.*
Journal of Agricultural Science	*J. Agric. Sci.*
Journal of Agricultural Research	*J. Agric. Res.*
Journal of Applied Physics	*J. Appl. Phys*
Journal of Association of Official Agricultural Chemists	*J. Assoc. Off. Agric. Chem.*
Journal of Bacteriology (thro' Brit. Chem. Abstr.)	*J. Bact.*
Journal of Biological Chemistry	*J. Biol. Chem.*
Journal of the Bradford Textile Society	*J. Brad. Text. Soc.*
Journal of Chemical Physics	*J. Chem. Phys*
Journal de Chimie Physique	*J. Chim. Phys.*
Journal of the Chemical Society	*J. Chem. Soc.*
Journal of Colloid Science	*J. Colloid Sci.*
Journal of Documentation	*J. Documentation*
Journal of Economic Entomology	*J. Econ. Entomol.*
Journal of the Electrochemical Society	*J. Electrochem. Soc.*
Journal of the Franklin Institute	*J. Franklin Inst.*
Journal of General Chemistry, Moscow	*J. Gen. Chem. U.S.S.R.*
Journal of General Microbiology	*J. Gen. Microbiol.*
Journal of General Physiology	*J. Gen. Physiol.*
Journal of Heredity (thro' Plant Breeding Abstr.)	*J. Hered.*
Journal of Home Economics (thro' Textile Tech. Digest)	*J. Home Econ.*
Journal of Industrial Hygiene and Toxicology (thro' Bull. Hyg.)	*J. Ind. Hyg. & Tox.*
Journal of the Institute of Brewing	*J. Inst. Brew.*
Journal of the Institution of Mechanical Engineers	*J. Instn Mech. Engrs*
Journal of the Institute of Petroleum	*J. Inst. Petroleum*
Journal of the Institution of Works Managers	*J. Inst. Works Managers*
Journal of the Huddersfield Textile Society	*J. Huddersfield Text. Soc.*
Journal of the Indian Chemical Society (thro' Brit. Chem. Abstr.)	*J. Indian Chem. Soc.*
Journal of the London Mathematical Society	*J. Lond. Math. Soc.*
Journal of Oil and Colour Chemists Association	*J. Oil Col. Chem. Ass.*
Journal of the Optical Society of America	*J. Opt. Soc. Amer.*
Journal of Pharmacology	*J. Pharmacol.*
Journal of Physical and Colloid Chemistry	*J. Phys. Colloid. Chem.*
Journal de Physique et de Radium	*J. Phys. Radium*
Journal of Polymer Science	*J. Polymer Sci.*
Journal of Research Association of British Rubber Manufacturers	*J.R.A. Brit. Rubber Mfrs.*
Journal of Research of the National Bureau of Standards	*J. Res. Nat. Bur. Stand.*
Journal of Scientific and Industrial Research, India	*J. Sci. Industr. Res. India*

Journal	Abbreviations
Journal of the Royal Institute of Chemistry	*J. Roy. Inst. Chem.*
Journal of the Royal Society of Arts	*J. Roy. Soc. Arts*
Journal of the Royal Statistical Society. Series B: also supplement.	*J. Roy. Stat. Soc.*
Journal of the Science Club	*J. Sci. Club*
Journal of Science and Technology, New Zealand	*J. Sci. Tech. N.Z.*
Journal of Scientific Instruments	*J. Sci. Instrum.*
Journal of the Scientific Research Association, Tokyo	*J. Sci. Res. Ass., Tokyo*
Journal of the Society of Chemical Industry	*J. Soc. Chem. Ind.*
Journal of the Society of the Chemical Industry (Japan)	*J. Soc. Chem Ind. (Japan)*
Journal of the Society of Dyers Colourists	*J. Soc. Dyers Col.*
Journal of the Textile Institute	*J. Textile Institute*
Journal of the University of Bombay (thro' Chemical Abstracts)	*J. Univ. Bombay*
Knitted Outerwear Times	*Knitted Outerwear Times*
Kodak Bulletin of Current Photographic Information	*Kodak Bull. Curr. Photogr. Inf.*
Kodak Monthly Abstract Bulletin	*Kodak Mthly Abstr. Bull.*
Kolloid Zeitschrift	*Koll. Zschr.*
Kolloid Zeitung (thro' Amer. Chem. Abstr.)	*Koll. Z.*
Koloniaal Instituut, Berichten	*Ber. Kol. Inst.*
Koloniaal Instituut, Mededeeling	*Meded. Kol. Inst.*
Kunstseide und Zellwolle	*Kunstseide u. Zellwolle*
Landbouw (thro' Plant Breeding Abstr.)	*Landbouw*
Liebig's Annalen der Chemie	*Liebig's Ann. Chem.*
Light and Lighting	*Light & Ltg*
Linen Trade Circular	*Linen Trade Circ.*
L'Ingenieur Textile	*L'Ingenieur Text.*
Linoleum Research Council	*Linoleum Res. Council*
London and Cambridge Economic Service Bulletin	*Lond. Camb. Econ. Serv. Bull.*
Machinery	*Machinery*
Machinist	*Machinist*
Maglieria	*Maglieria*
Makromolekulare Chemie	*Makromol. Chem.*
Management Abstracts	*Management Abstr.*
Manager	*Manager*
Manchester Chamber of Commerce Monthly Record	*Manchr Cham. Comm. Mthly Rec.*
Manufacturing Clothier	*Mfrg Clothier*
Mathematical Tables and Aids to Computation	*Math. Tables Aid Comp.*
Mechanical Engineering	*Mech. Engng*
Mededeelingen van den Rijksvoorlichtingsdienst ten Behoeve van den Vezelhandel an de Vezelnijverjeid.	*Meded. Rijks. Beh. Vezelh. Vezelnijv.*
Melliand Textilberichte	*Melliand Textilber.* *German Edition* *English Edition*
Memoires des Services Chimiques de Etat (Paris)	*Mem. Serv. Chim. Etat.*
Merino Breeders' Journal	*Merino Breeders' J.*
Mikrochemie vereinigt mit Mikrochimica Acta	*Mikrochem. Mikrochim. Acta*
Mining Magazine	*Mining Mag.*
Modern Plastics	*Modern Plastics*
Monatschefte Fürchemie und Verwandte teile anderer Wissenschaften, Wien (thro' Amer. Chem. Abstr.)	*Monatschefte für Chemie*
Monthly Digest of Statistics	*Mthly Digest Stat.*
Mycologia (thro' Rev. Appl. Mycol.)	*Mycologia*
National Research Council Research News	*Nat. Res. Coun. Canada Res. News*
National Wool Grower	*Nat. Wool Grower*
Nature	*Nature*
New Zealand Journal of Agriculture	*N.Z. J. Agric.*
New Zealand Journal of Science and Technology	*N.Z. J. Sci. Tech.*
News Edition. American Chemical Society	*News Ed. Amer. Chem. Soc.*
Nickel Bulletin	*Nickel Bull.*

Journal	Abbreviations
Occupational Psychology	*Occup. Psychol.*
Official Digest of the Federation of Paint and Varnish Production Clubs (U.S.A.)	*Offic. Digest Fed. Paint Varn. Prod. Clubs*
Official Gazette	*Off. Gaz. U.S. Pat. Off.*
Official Journal (Patents)	*Off. J. Pat.*
Oil	*Oil*
Oil and Colour Trades Journal	*Oil & Col. Trades J.*
Onderstepoort Journal	*Onderstepoort J.*
Operational Research Quarterly	*Oper. Res. Quart.*
Paper Trade Journal	*Paper Trade J.*
Paper Industry and Paper World	*Paper Ind. & Paper World*
Papers of the American Association of Textile Technologists	*Papers Amer. Ass. Text. Tech.*
Parasitology	*Parasitology*
Pastoral Review	*Past. Rev.*
Patents Abridgments, Groups IV, V, VIII, XVI, XX	*Pat. Abr. IV, etc.*
Patra Journal	*Patra J.*
Philips Technical Review	*Philips Tech. Rev.*
Philosophical Magazine	*Phil. Mag.*
Photographic Abstracts	*Photogr. Abstr.*
Photographic Journal. A.	*Photogr. J.*
Photographic Journal. B.	*Photogr. J.*
Physical Review	*Phys. Rev.*
Phytopathology	*Phytopathology*
Planning	*Planning*
Plant Breeding Abstracts	*Plant Breeding Abstr.*
Plant Physiology (thro' Amer. Chem. Abstr.)	*Plant Phys.*
Plastics	*Plastics*
Platts Bulletin	*Platts Bull.*
Power Laundry	*Power Laundry*
Power and Works Engineer	*Power & Wks Eng.*
Practical Engineering	*Pract. Engng*
Proceedings of the Cambridge Philosophical Society	*Proc. Camb. Phil. Soc.*
Proceedings of the Institution of Mechanical Engineers	*Proc. Instn Mech. Engrs*
Proceedings of the Koninklijke Akademie	*Proc. K. Ned. Akad. Wet.*
Proceedings of the London Mathematical Society	*Proc. Lond. Math. Soc.*
Proceedings of the Physical Society	*Proc. Phys. Soc.*
Proceedings of the Royal Society	*Proc. Roy. Soc.*
Psychology at Work	*Psychol. at Work*
Pulp and Paper Magazine, Canada	*Pulp & Paper Mag.*
Quarterly Reviews, Chemical Society	*Quart. Rev. Chem. Soc.*
Quarterly Statistical Supplement	*Quart. Stat. Suppl.*
Queensland Agricultural Journal	*Queensland Agric. J.*
Queensland Country Life	*Queensland Ctry Life*
Rayon Or'ganon	*Rayon Org.*
Rayon and Synthetic Textiles	*Rayon Synth. Text.*
Rayonne	*Rayonne*
Rayon Revue (Enka en Breda)	*Rayon Rev.*
Recueil des Travaux Chimiques des Pays-Bas	*Rec. Trav. Chim.*
Research	*Research*
Research Association of British Rubber Manufacturers, Bulletin	*Bull. R. A. Brit. Rubber Mfrs.*
Review of Applied Mycology	*Rev. Appl. Mycol.*
Review of Scientific Instruments	*Rev. Sci. Instrum.*
Reviews on Modern Physics	*Rev. Mod. Phys.*
Rivista Tessile	*Riv. Tessile*
Revue générale des matières colorantes, de la teinture, de l'impression et des apprêts.	*Rev. gén. mat. col.*
Revue générale de Teinture, Impression, Blanchiment, Appret.	*TIBA*
Revue Textile	*Rev. Text.*
Revue Universelle de la Soie et des Textiles Artificiels	*RUSTA*
Rohm and Haas Reporter	*Rohm & Haas Rep.*
Royal Society. Philosophical Transactions. A. and B.	*Philos. Trans.*
Rubber Developments	*Rubber Dev.*

Journal	Abbreviations
Saco-Lowell Bulletin	*Saco-Lowell Bull.*
Sankhya (Indian Journal of Statistics)	*Sankhya*
Schweizerische Vereinigung von Färbereifachleuten Fachorgan für Textilveredlung.	*Schweiz. V. F. Fachorg. f. Textilver.*
Science	*Science*
Science Abstracts, A. and B.	*Sci. Abstr.*
Science Progress	*Sci. Progr.*
Scottish Journal of Agriculture	*Scottish J. Agric.*
Sewage Works Journal	*Sewage Wks. J.*
Sheep and Goat Raiser	*Sheep & Goat Raisr*
Silk and Rayon Record	*Silk & Rayon Rec.*
Soap	*Soap*
Soil Science	*Soil Sci.*
Spectrochimica Acta	*Spectrochim. Acta*
Stain Technology	*Stain Tech.*
Standardisation	*Standardisation*
Sulzer Technical Review	*Sulzer Tech. Rev.*
Surveyor	*Surveyor*
Svensk kemisk Tidskrift (thro' Brit. Chem. Abstr.)	*Svensk. kem Tidskr.*
Svensk Papperstidning (thro' Brit. Chem. Abstr.)	*Svensk Papperstidn.*
Technical Bulletin (du Pont)	*du Pont Tech. Bull.*
Teintex	*Teintex*
Tekstil Prom	*Tekstil Prom*
Textielwezen	*Textielwezen*
Textilberichte	*Textilber.*
Textile Age	*Text. Age*
Textile Colorist (thro' Text. Technol. Digest)	*Text. Col.*
Textile Industries	*Text. Industr.*
Textile Industry U.S.S.R.	*Text. Industr. U.S.S.R.*
Textile Journal of Australia	*Text. J. Austral.*
Textile Manufacturer	*Text. Mfr*
Textile Mercury and Argus	*Text. Merc.*
Textile Recorder	*Text. Rec.*
Textile Research Journal	*Text. Res. J.*
Textil Rundschau	*Text. Rdsch.*
Textile Technology Digest	*Text. Tech. Digest*
Textile Weekly	*Text. Whly*
Textile World	*Text. World*
Textil-Praxis	*Text.-Praxis*
Time Study Engineer	*Time Study Engr*
Times Review of Industry	*Times Rev. Ind.*
Tinctoria (thro' Amer. Chem. Abstr.)	*Tinctoria*
Transactions of the Faraday Society	*Trans. Faraday Soc.*
Transactions of the Illuminating Engineering Society	*Trans. Illum. Engng Soc.*
Transactions of the Institution of Chemical Engineers	*Trans. Instn. Chem. Engrs.*
Transactions of the Institution of the Rubber Industry	*Trans. Inst. Rubber Ind.*
Tropical Agriculture	*Trop. Agriculture*
Tropical Agriculturist, Ceylon	*Trop. Agriculturist*
Traveler (Victor Ring Traveler Co.)	*Traveler*
Underwear and Stockings	*Underwear & Stockings*
Water Pollution Abstracts, D.S.I.R.	*Water Poll. Abstr.*
Weekly Hansard	*Whly Hansard*
Welder	*Welder*
Whitin Review	*Whitin Rev.*
Wireless Engineer	*Wireless Engr*
Wool	*Wool*
Wool Grower (S. Africa)	*Wool Grower, S. Africa*
Wool Knowledge	*Wool Knowledge*
Wool Record	*Wool Rec.*
Wool Science Review	*Wool Sci. Rev.*
World Paper Trade Review	*World Paper Trade Rev.*
Zeitschrift für Naturwissenschaften	*Z. Naturw.*
Zeitschrift Naturforschung	*Z. Naturforschung*

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(B)—Animal

Sheep and Goats: Calcium and Phosphorus Requirements. H. Schmidt. *Sheep and Goat Raiser*, 1950, **31**, No. 2, 20-21. Details are given of the calcium and phosphorus requirements of cattle and sheep. When compared with the chemical composition of the forage in Texas, it is found that the vegetation consumed contains sufficient calcium but that there is a deficiency of phosphorus. The addition of bone meal is recommended and the proportions of the two elements in several types of foodstuffs are tabulated. W—**1B.**

Speciality Hair Fibers: How to Identify Them. A. N. Patterson. *Rayon Synth. Text.*, 1950, **31**, No. 11, 41-43. A short account of the structure and dimensions of several types of animal textile fibres. W—**1B.**

(D)—Artificial

High Polymers and Textile Fibres. R. L. Elliott. *Text. Rec.*, 1950, **68**, August, 71-72. A brief, simplified account is given of some of the properties and characteristics of high polymers, with reference to the structure of textile fibres. C—**1D.**

Synthetic Fibres: Production. ("New Fibers.") J. K. Novins. *Hosiery Underwear Rev.*, 1950, **33**, (11), 121-3, 141. Review of production plans for Orlon (du Pont), Dynel (Carbide and Carbon) and the new Chemstrand fibre of the acrylic type. H—**1D.**

Patents

Cyano-ethyl Cellulose Ether Filaments: Production. Courtaulds Ltd., J. H. MacGregor, and C. Pugh. B.P.633,807 of 1/12/1947: 30/12/1949 [Addition to B.P.588,751]. Filaments insoluble in water are obtained by the action at room temperature of acrylonitrile on viscose (cellulose 7·75 per cent., NaOH 6·2 per cent.), and extrusion of the filtered mass into an acid coagulating bath. Yarns containing about 2 per cent. of nitrogen and having tenacities up to 1·75 g. per denier, dry, and 0·45 g. per den., wet, are described in the examples of the process. (See B.P.588,751; *J. Textile Institute*, 1947, **38**, A563.) C.

Regenerated Protein Filaments: Stabilisation. N.V. Onderzoekingsinstituut Research. B.P.634,812: Appl. and filing 23/7/1947; Publ. 29/3/1950; Dutch appl. 2/12/1946. Extruded protein (*e.g.*, casein) filaments are stabilised, especially towards acid dye liquors, by soaking them in a pre-condensate of resorcinol and formaldehyde followed by heat treatment to complete the condensation. A typical soaking solution is made by heating together resorcinol (0·5 kg.) and formalin (3 l.) for half an hour at 60° C., cooling and diluting to 40 litres. C.

Poly-alkylene Oxides: Application in Viscose Extrusion. North American Rayon Corporation. B.P.634,868: Appl. and filing 31/7/1947; Publ. 29/3/1950; U.S.A. appl. 7/3/1940. The claim is for the addition to viscose, for the purpose of preventing incrustation of the spinnerets, of small amounts (*e.g.*, 0·005 per cent.) of polymerised ethylene oxide (*e.g.*, the "Carbowaxes"). C.

Perforated Viscose Rayon Spinning Box. Courtaulds Ltd. and R. M. Lodge. B.P.635,113: Appl. 2/2/1948; Filing 1/2/1949; Publ. 5/4/1950. The formation of cakes of high-denier viscose yarn, *e.g.*, 1180 den. 500 fil. for tyre cords, is so rapid that an objectionable amount of carbon disulphide commonly remains entrained in the cakes. The present invention proposes to overcome this difficulty by drilling holes in the spinning box and letting the box run for about an hour when full. The optimum total area of these additional holes is about 0·2 sq. inch. There may be, for example, five rows each of 24 holes of $\frac{3}{32}$ in. diameter, equally spaced but staggered so as to avoid undue weakening of the box. Each extrusion position on the machine is provided with two sets of lower and upper godets and two spinning boxes so that the additional rotation of one box does not interrupt the continuous extrusion. C.

Extruded Starch Filaments and Films: Production. D. Horsak. B.P.635,274: Appl. and filing 15/1/1947; Publ. 5/4/1950; Czech appl. 19/1/1946 and 16/12/1946. Starch paste is prepared with a "softener" (*e.g.*, glycerin or cal-

cium or magnesium chloride) and/or a "flux" (*e.g.*, urea) and formed into films or filaments by extrusion into a hardening bath (*e.g.*, methanol). Various additions may be made to the mass, such as dyes or photosensitive materials. The products may be used for wrapping materials, forming into felts, and shaping into cartons, etc. C.

Cellulose Esters: Filtration in Manufacture. British Celanese Ltd. B.P. 635,668: Appl. and filing 24/2/1948; Publ. 12/4/1950; U.S.A. appl. 28/2/1947. The claim is for a step in the manufacture of cellulose esters by the usual method in which the solution of the ester is filtered through a layer of acicular crystals of magnesium (or calcium) sulphate. The special form of crystal is conveniently obtained by neutralising the sulphuric acid used as catalyst in the esterification with the magnesium (or calcium) salt of the organic acid (*e.g.*, acetic or propionic). Appropriate conditions of concentration and temperature are disclosed in two examples. C.

Artificial Wool: Making from Nylon Fibres. B. Graham (to du Pont). U.S.P. 2,516,562 of 25/7/1950. Oriented nylon filaments are made insoluble by treatment with formaldehyde, and are then heated in a relaxed condition to 10°-50° C. below their melting point, until the filaments shrink at least 20 per cent., preferably 50 per cent., of their original oriented length. The treated filaments have wool-like crimp, elongation and dye uptake and a soft, warm feel. W.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—Preparatory Processes

Wool Card: Synchronous Drive. Davis and Furber Machine Co. *Text. Industr.*, 1950, 114, No. 11, 189. A 72 × 60 woollen card set is operated as a unit from a central control panel, and stock delivery from the first to the second breaker section is co-ordinated. The condenser has a new type apron drive and long-wearing plastic tapes. W—2A.

Worsted Drawing: Fibre Breakage. P. P. Townend. *Text. Rec.*, 1950, 68, No. 811, 78-80. A survey of the literature on fibre breakage in Bradford open drawing, and an account of a recent investigation into fibre breakage in French drawing (these Abstracts, 1950, A506). W—2A.

Synthetic Rubber Condenser Rubbers: Development. Andre Rubber Co. Ltd. *Text. Mfr*, 1950, 76, 528-529. Condenser rubbers for woollen carding are made of synthetic rubber which is now highly resistant to oil and oleines. This prevents trouble on starting up after weekends. W—2A.

Worsted Oils: Testing. ("Tests de Controle de la Valeur des Produits d'Ensimage pour la Laine Peignée.") *Bull. Inst. Text. France*, 1950, No. 21, 133-137. A rapid laboratory ageing test for assessing the suitability of a wool combing oil is described. The method consists of applying the oil to hanks of worsted yarn previously extracted with a mixture of 60 per cent. alcohol and 40 per cent. trichlorethylene. The ageing of the yarn is carried out by heating in an oven. The yarn is then scoured and the colour compared with that of a similar hank which has not been oiled. W—2A.

Static Eliminator for Pin Drafters and Gill Reducers. Simco Co. *Text. Industr.*, 1950, 114, No. 11, 191. It is stated that this prevents laps on the front rollers, helps to keep the fallers clean, and produces a more uniform sliver. The device consists of a midget power unit and one or more static bars. W—2A.

Full Intersecting Gill Reducer. Holdsworth Gill Screw Co. *Text. Industr.*, 1950, 114, No. 11, 106. The high speed, full intersecting gill reducer described is designed for the abbreviated system of producing worsted yarns. W—2A.

Anglo-Continental Drawing. *Fibres*, 1950, 11, 315-317. The scope of Anglo-Continental drawing is explained. Wools of 50s to 70s quality and 2 in. to 8 or 9 in. long are most suitable for this system, which is essentially a pin drawing control. The features of a typical installation are described, especially the patent self-stripping porcupine. W—2A.

Cotton Blends: Development. J. S. Kenrick. *Hosiery Underwear Rev.*, 1950, 33, (11), 138-9, 150. Review of the development of cotton blends, paying particular attention to the production plans and dyeing of Fibre A, a new cotton/nylon blend developed by the Aberfoyle Manufacturing Co. H—2A.

(B)—Spinning and Doubling

Balmes High-draft System. Anon. *Text. Rec.*, 1950, **68**, August, 78-79. An illustrated description is given of the Balmes high-draft system which has four lines of bottom rollers and five lines of top rollers. The odd top roller is a patent light, self-weighted roller riding on the second and third lines of bottom rollers. (See also *J. Textile Institute*, 1950, **41**, A111.) C—**2B.**

Woollen and Worsted Spinning. R. S. Audley. *Fibres*, 1950, **11**, 311-314. Continuation of previous article (these Abstracts, 1950, A492) describing further improvements in modern spinning frames, *e.g.*, draft and twist gearing, spindle design, a change speed device, a reverse twist device, Ambler super-drafting, and Prince-Smith & Stells centrifugal spinning. W—**2B.**

New Top Roll for Worsted Spinning. Machinecraft, Inc. *Text. Industr.*, 1950, **114**, No. 11, 165. A new ball bearing top roller has been introduced for use on the American system of worsted spinning and roving. This "Climax" roller can carry a weight up to and including 75 lb. W—**2B.**

McGlynn Hays Spinner: Improvements. McGlynn Hays Industries, Inc. *Text. Industr.*, 1950, **114**, No. 11, 159. The Universal high speed French type worsted spinning machine has been improved and it is now possible to spin worsted yarn at spindle speeds in excess of 10,000 r.p.m. Other improvements include (1) six line, high draft, fibre control draft field, (2) pendulum type top pressure roller support, (3) ball bearing pressure rollers, (4) hydraulic front roller pressure, (5) ball bearing type spindle, (6) net 8-ounce package using only 2¼ in. ring size, (7) spin regulated drives, and (8) pneumafil vacuum system. W—**2B.**

Woollen and Worsted Yarn Production: Developments. P. P. Townend. *Text. Rec. Book of the Year*, 1950, 119-122. The review covers scouring, woollen and worsted carding, worsted combing and drawing and woollen and worsted spinning. There are several references to the literature including patents. W—**2B.**

Woollen and Worsted Yarn Manufacture. (II. "Plain and Fancy Twisting.") *Wool Rec.*, 1950, **78**, 1243, 1245, 1246. The manufacture of gimp and knop yarns is discussed. Details are given of the composition of the yarn and of the machine. Typical examples are described. W—**2B.**

Mule Spinning: Preventing Ends Down. *Text. Industr.*, 1950, **114**, No. 10, 155-156. The reversal of the spindles after the outward run causes the yarn to become slack. The backing-off chain should be as taut as possible in order to reduce the period of slackness to a minimum. Simple methods for applying tension gradually during the backing-off period and in the first few inches of the inward run are described. Diagrams are given of the easing motions, and the use of these allows more weights to be placed on the "salmon head" levers. W—**2B.**

Woollen Spinning: Basis of Manipulation. ("Die Grundlagen der Manipulation in der Streichgarnspinnerei.") H. Kittel. *Text. Rdsch.*, 1950, **5**, 455-459. The homogeneity of the blend, the count limit to which the yarn can be spun, the strength of the raw material in relation to the requirements of the resulting fabrics, and the reproducibility of the process are discussed as factors to be taken into consideration in the choice of raw material for woollen yarns. Special reference is made to the influence of fibre length on the count when other fibres are used with wool for cheapening purposes. W—**2B.**

(D)—Yarns and Cords

Nylon High-twists: Development. *Hosiery Underwear Rev.*, 1950, **33**, (12), 124-5. Reviews the development of 15-denier nylon twisted 40 turns or more, and discusses the characteristics of experimental stockings knitted from this yarn. H—**2D.**

Patents

Cord Plaiting Machine. F. A. Izaguirre. B.P.634,164: Appl. and filing 26/6/1946; Publ. 15/3/1950; Spanish appl. 18/9/1944. The claim is for a plaiting machine wherein guiding grooves that form a continuous path consisting of two equal circles lying in intersecting planes guide thread nozzles and their spindles in rotating and reciprocating movement to effect plaiting at a point from which the nozzles are at all times equidistant. The spindles are supported by carriers that slide and reciprocate on bars. C.

Yarn Winding Machine Knock-off Device. Arundel Coulthard & Co. Ltd. and F. Bottomley. B.P.634,264: Appl. 26/11/1947; Filing 6/9/1948; Publ. 15/3/1950. In a yarn winding machine of the type in which the package is rotated by surface contact with a driving drum and its cradle is pivotally moved as the package grows, a collar device is pivoted to the cradle to actuate the detector box (otherwise responsive to a broken end) to cause a knock-off when the package reaches a predetermined diameter. C.

Yarn Dressing Device. C. Luria. B.P.634,780: Appl. and filing, 27/8/1946; Publ. 29/3/1950; Spanish appl. 8/7/1944. The invention relates to a method of dressing a yarn by causing it to travel (*e.g.*, as a warp sheet) over a wick dipping in a vessel that is supplied with a readily melted coating, material selected from oils, fats, soaps, resins, gums, glues, and gelatins. Electrical heating is proposed of the material in the supply tank, the feed pipes, and the container with the wick. C.

Roller and Clearer Carding Engine with Adjacent Feeding and Doffing Points. A. G. Arundel-Evans. B.P.634,928: Appl. 6/2/1947; Filing 5/2/1948; Publ. 29/3/1950. The claim is for a roller and clearer carding engine in which the feeding device (lattice or licker-in) is located above the doffer on the same side of the cylinder. C.

Hopper Feeder for Opening Machines. Akt. Ges. J. J. Rieter & Cie. B.P.634,929: Appl. and filing 21/2/1947; Publ. 29/3/1950; Swiss appl. 10/10/1946. The claim is for a hopper feeder comprising two endless delivery lattices one of which is pivoted about its lower roller so that the V-space between them can be adjusted. A regulating roller is arranged above the other lattice. The two lattices transport the material to a horizontal lattice. C.

Pulp Bale Disintegrating Apparatus. O. Imset. B.P.635,110: Appl. and filing 16/12/1947; Publ. 5/4/1950; Swedish appl. 27/5/1946. The invention relates to apparatus for separating the fibres from a mass such as a bale of wood pulp or waste paper and forming a suspension in water. A tub such as that used with a common hollander is fitted with a compartment next to one vertical side wall that houses a rotating disc and a scoop member, the latter facing an opening in the wall. The bale and lumps are progressively reduced but the "defibred" material alone passes through the scoop member to an outlet. C.

Spinning Spindle Bearing. W. Okuniew. B.P.635,606: Appl. and filing 15/10/1947; Publ. 12/4/1950. Bearings for spinning or like spindles are constituted by a metal half and a part formed by a strip of felt or similar textile the end of which is in contact with the lubricant supply. There are a series of the metal halves separated by U-shaped pieces that house the grease and the felt strip spans the whole series. Textile washers are fitted above and below the bearings to absorb any grease that might creep up the spindle or work downwards. Longer life, suppression of vibration, and automatic take-up of wear are claimed. C.

Yarn Guide and Slub Catcher. T. Fishwick. B.P.635,738: Appl. 22/9/1947; Filing 8/6/1948; Publ. 12/4/1950. The invention relates to a pressed steel, combined adjustable guide and cleaner for mounting on the traverse rail when winding any type of yarn. The two cleaner blades are mounted within a frame and are adjustable by a single cam action through a turnscrew. The blades can be reversed before being reground. C.

Spinning Frame Slubbing Motion. F. W. Wardley (for Dominion Textile Co. Ltd.). B.P.635,780: Appl. 10/6/1947; Filing 7/4/1948; Publ. 19/4/1950. The invention relates to means whereby a single slubbing motion effects the appropriate acceleration of the back rollers on both sides of a spinning frame. A first clutch mechanism, under direct control of the conventional slubbing motion, is fitted with a yoke that actuates a rod mounted for rotation about its long axis and extending to a second yoke on the other side of the frame which engages the second clutch. C.

Wool Card Rub Apron. H. M. Bacon (to The Dayton Rubber Co.). U.S.P. 2,520,192 of 29/8/1950. Aprons for wool cards have a base consisting of layers of straight-laid and bias-laid woven fabric, and a thicker body portion of synthetic rubber extending to the edges of the base. There are retaining buttons on the edges of the inner surface of the base and inserts of a heavy, tear-resistant fabric

to which buttons are fastened. The apron has good gripping action, a high degree of flexibility and of tensile strength, and long service life. In a modification of the invention, the inner base layer may be of synthetic rubber reinforced by cords running parallel to the longitudinal axis of the apron. W.

3—CONVERSION OF YARNS INTO FABRICS

(A)—PREPARATORY PROCESSES

Winding: Tension Control. ("Control of Tension in Winding.") E. W. Schmiedel. *Hosiery Times*, 1950, 23, (260), 39-40. Discusses practical points which help in maintaining correct yarn tension during winding, including machine maintenance, speed of winding, position and type of supply package, and properly tied knots. H—3A.

(B)—SIZING

Carrageenin: Extraction, Fractionation, and Evaluation. R. C. Rose. *Canad. J. Res.*, 1950, 28, F, 202-212. The effects of temperature, cations, salt, and heat treatment on the extraction of carrageenin from *Chondrus crispus*, have been investigated. Carrageenin fractions have been obtained by extracting carrageen at specific temperature spreads. Viscosities and suspending concentrations (the concentration required to increase the viscosity of milk to 15 centistokes) of the fractions were determined and the effect on temperature on these quantities observed. A method of evaluating carrageen based on the ability of the carrageen to increase the viscosity of milk to 15 centistokes has been examined. Results are presented and discussed. C—3B.

(C)—WEAVING

Warp Tension Control in Weaving. E. J. Poole. *J. Huddersfield Text. Soc.*, 1949-50, 41, 30-33. A description, together with photographs, of the roller let-off motion, consisting of inter-geared fluted metal rollers covered with an oil-resistant rubber sleeve, which provides a cushion grip on the yarn when the rollers are set in mesh to a predetermined gauge. W—3C.

Weaving Heavy Wool Fabrics. ("Angewandte Bindungstechnik für schwerere Wollgewebe.") G. Rückl. *Melliand Textilber.*, 1950, 31, 538-541. Several examples are given of the construction of double-woven woollen fabrics produced from fine yarns. W—3C.

Automatic Weaving and Automatic Looms. A. E. Aspinall. *J. Huddersfield Text. Soc.*, 1949-50, 41, 34-49. The Crompton and Knowles W-3 looms for weaving worsteds and woollens are described in detail and the subject of automatic weaving is reviewed. W—3C.

Automatic Weaving. D. W. M. Scott. *J. Huddersfield Text. Soc.*, 1949-50, 41, 75-89. Descriptions are given of some of the automatic looms manufactured in the U.S. and in Switzerland. Some advantages resulting from the introduction of automatic weaving are described. These include saving of labour, increased earnings for operators and cheaper production. Some limitations of these looms are mentioned. W—3C.

(D)—KNITTING

Knitting Machine Progress, 1936-1950. J. B. Lancashire. *Text. Rec.*, 1950, 68, August, 75-77. Continuing his survey[1] of the developments in knitting machinery between 1936 and 1950, the author deals with seamless hosiery machines. Mention is made of American developments, single-cylinder machine development, double-cylinder machine improvements, and wale-thread patterning. ([1]See *J. Textile Institute*, 1950, 41, A517.) C—3D.

Nylon Staple in Hosiery. D. H. Heckert. *Amer. Dyest. Rep.*, 1950, 39, P301-303; *Dyer*, 1950, 104, 183, 185. The manufacture of nylon staple fibre and its uses are briefly indicated. Wear resistance, pilling, boarding, and counter appearance are discussed with special reference to hosiery. The use of shorter crimp-set staple in yarns of higher twist to obtain better loft, better coverage, and less pilling is explained. C—3D.

Perlon Hosiery: Manufacture. *Underwear & Stockings*, 1950, 4, (12), 8. Discusses the appearance and wearing properties of, and the methods of strengthening, knitting and fashioning Perlon hosiery. Illustrations. H—3D.

Rubber Yarns: Use in Knitted Fabrics. *Hosiery Trade J.*, 1950, 62, (684), 48. Discusses the many methods of usage of rubber yarns in knitted articles, with particular reference to surgical stockings, and lace-stitch narrow fabrics. H—**3D.**

(G)—FABRICS

Wool and Rayon 18-ounce Serge. *Amer. Wool & Cotton Rep.*, 1950, 64, No. 44, 16, 43. Details are given of the (American) Quartermaster Specification for a 70 per cent. wool and 30 per cent. rayon 18-ounce serge for Army uniforms. The wool top and rayon staple (3½-6 inches in length and 5·5 denier) are converted into a 2-ply yarn. The wool is dyed with chrome dyes and the rayon is spun dyed but the use of a small percentage of fast to light azoic yellow to provide bloom is permissible. Shrinkage limits and the minimum physical requirements of the finished material are included. W—**3G.**

PATENTS

Loom Under Picking Motion. W. Felton and D. Crabtree and Son Ltd. B.P. 633,809 of 19/12/1947: 30/12/1949. The claim is for an under-pick motion having a picking stick nearer the centre of the loom than the picker and connected to this by a flexible or pliable member (*e.g.*, a stranded wire) one end of which is attached to the picker and the other end to the sley *via* a pulley carried by the picking stick, so that during picking the picker is pulled along by the stick about twice the distance over which the pulley is carried. The picker is also connected to a spring- or weight-loaded stranded wire so that it returns to its initial position after the picking stroke. C.

Sliver or Cloth Selvedge Electric Feeler Device. Allmanna Svenska Elektriska Akt. B.P.633,871 of 10/4/1947: 30/12/1949 (Conv. 23/4/1946). Means for detecting the edge of a textile fabric or sliver in electrically driven machines (stenter, carding engine, comber, draw-frame) consist of an electric contact device which is operable by an armature that may be attracted against the action of a spring by a disc magnet which can be turned by means of a feeling finger, but is prevented by a stop from touching the armature. One part of the disc is of smaller diameter than the rest and the arrangement is such that when the larger part is before the armature this is attracted and the contacts open whereas when the smaller part is before the armature the force of the spring predominates and the contacts are closed. C.

Circular Knitting Machine Nib Jack System. G. Stibbe & Co. Ltd., E. V. Stibbe, and A. M. Brown. B.P.633,948 of 26/2/1947: 30/12/1949. The invention relates to the utilization of nib jacks in co-operation with welt instruments or transfer bits of the welt mechanism to produce inturned welts and shaped portions such as Cuban heels on circular knitting machines. The nib jack system comprises a circular set of nib jacks with differentiated operating butt formations in pre-arranged order, means co-operating with a segmental series of the nib jacks to cause associated needles to knit the shaped areas, and other means co-operating with the complete set of nib jacks to cause desired needles to co-operate with the welt instruments as required for the formation of inturned welts. C.

Card Web Liquid Treatment and Sliver Forming Apparatus. Monsanto Chemical Co. B.P.634,125: Appl. and filing 27/6/1947; Publ. 15/3/1950; U.S.A. appl. 22/7/1946. The invention relates to a method of, and apparatus for, treatment of a card web (especially cotton) with a liquid (especially a colloidal solution of silica) and condensation of the web to a sliver. The apparatus comprises a housing provided with a U-shaped vertical channel, means for passing the partially condensed card web between the walls of the channel, and centrifugal discs on opposite sides of the channel for dashing the finely-divided liquid on to the travelling web. Holes are provided in the housing wall of the channel. C.

Cemented Pile Fabric Production Apparatus. E. B. Allen. B.P.634,131: Appl. and filing 20/8/1947; Publ. 15/3/1950; U.S.A. appl. 20/8/1946. Apparatus for making pile fabric of the kind in which the pile fibre is cemented to a backing material includes a confining passage to receive a structure formed from a pleated warp with severable separator strips in the pleats, a warp guide mounted for to-and-fro movement over the mouth of the passage for pleating the warp over the strips, and independent means for delivering strips one at a time into the mouth of the passage. The last device, for transferring the strips,

consists of two sets of strip-transfer means in tandem and their cycles of movement are synchronised so as to be 180° out of phase with each other. The specification makes 29 claims and is illustrated with 16 sheets of machine drawings. C.

Superposed Needle Cylinder Knitting Machine. Scott & Williams Incorporated. B.P.634,145: Appl. and filing 2/10/1945; Publ. 15/3/1950; U.S.A. appl. 12/10/1944. The broad object of the invention is to make possible elaborate operation of the needles of a knitting machine having superposed needle cylinders without allowing any needle to be ever out of control by both controlling sliders. The machine is capable of producing tuck and float stitches in links-and-links fabric and of the reciprocatory knitting of heel and toe portions of stockings with the incidental narrowing and widening. Details are shown in three sheets of machine drawings. C.

Circular Knitting Machine Elastic Yarn Feeding Mechanism. Hemphill Co. B.P.634,237: Appl. and filing 29/7/1947; Publ. 15/3/1950; U.S.A. appl. 22/4/1940. The claim is for means for feeding elastic yarn to the needles of a circular, independent-needle knitting machine, especially of the "Banner" type. The mechanism ensures that the elastic yarn may be individually controlled to feed to spaced courses and float at intermediate courses and may be withdrawn entirely at any desired course and bound without interference with other yarn (*e.g.*, striping yarn) feeding at the main mouthpiece of the machine. Similarly, the yarns at the main mouthpiece may be fed to the needles or withdrawn without interference with the feeding or withdrawal of the elastic yarn. C.

Warp Single-thread Separating Device. Koefoed, Hauberg, Marstrand og Helweg (Titan, Akt.). B.P.634,364: Appl. and filing 12/10/1945; Publ. 22/3/1950; Danish appl. 9/5/1944. The invention relates to means for separating single ends from a warp, for the purpose of looming or tying a new warp to one already in the loom, so that crossing or inversion of more than two consecutive threads is prevented. The threads are separated in two steps. In the first a hooked member engages one or at most two ends at a time from the edge of the warp and moves it (or them) away to a holding member where a second separating member engages a single end and moves it towards other members for subsequent treatment. In the second step the tension of the thread (or threads) in the inactive position prevents the arrival of another end until the second step is completed. Two embodiments of the invention are shown in diagrams. C.

Loom Picker Shock Absorber. Società Applicazioni Gomma Antivibranti. B.P.634,447: Appl. and filing 8/9/1947; Publ. 22/3/1950; Italian appl. 27/1/1944. A shock absorber for loom pickers is made of a tubular block of resilient rubber threaded over the picker spindle, and one or more bushes of rigid material (metal or fabric-reinforced plastic) bonded to the rubber for the smooth passage of the picker spindle. C.

Fabric Winding Apparatus. British Celanese Ltd. B.P.634,515: Appl. and filing 19/5/1947; Publ. 22/3/1950; U.S.A. appl. 23/5/1946. [Addition to B.P. 571,493.] The parent invention was for a fabric winding machine with an angularly oscillatable guide roller. The present invention is for new means by which the axis of the guide roller over which the fabric passes to a take-up roller may be oscillated to a predetermined extent. The apparatus comprises a crank driven by worm gear from the guide roller and having the axis of its shaft at right angles to the guide roller axis, and a connecting rod between the crank and a stationary part of the apparatus. [See B.P.571,493; *J. Textile Institute*, 1945, **36**, A466.] C.

Circular Knitting Machine Terry Loop and Plating Mechanism. E. Killian. B.P.634,569: Appl. and filing 22/5/1946; Publ. 22/3/1950; U.S.A. appl. 25/3/1944. The invention relates to means for producing terry loops and for plating in the knitting of seamless hosiery on circular, independent-needle machines of the "Banner" type. The device combines a throat plate provided with a yarn reeving edge and a yarn guide for feeding yarn to the needles from below the reeving edge, with a second yarn guide for feeding yarn direct to the needles from several predetermined positions above the reeving edge. Details are shown in four sheets of machine drawings. C.

Knitting Machine Yarn Feeding Device. E. Killian. B.P.634,571: Appl. and filing 11/6/1946; Publ. 22/3/1950. The invention covers the special feeding mechanism embodied in B.P.634,569 (see preceding abstract). It comprises a finger-like member carrying a yarn guide arranged for lateral movement between two determined feeding positions. The guide element is pivoted to the member for unrestrained lateral movement relative to the member from and toward either feeding position by the pulling action exerted on the element by the yarn when its feeding direction is changed. C.

Circular Rotation and Oscillation Knitting Machine Coupling and Shock Absorber. Charnwood Engineering Co. Ltd., R. Siddall, G. W. Purchase, and D. J. Harris. B.P.634,573: Appl. and filing 29/10/1947; Publ. 22/3/1950. A circular machine for knitting by rotation and by oscillation of its needle bed is provided with a coupling that automatically disconnects the drive on changing from rotational to oscillating knitting and reconnects on changing back again, the coupling consisting of a series of coaxial dog members. The rotational drive is transmitted through a resilient shock absorber, comprising rubber or a torsion spring. C.

Circular Knitting Machine Elastic Yarn Feeding, Binding, and Cutting Mechanism. Hemphill Co. B.P.634,594: Appl. and filing 30/7/1947; Publ. 22/3/1950; U.S.A. appl. 24/5/1939. The invention relates to the combination of a vertically movable yarn feeder and a binder and cutter located wholly outside the needle circle for use when feeding elastic yarn to hosiery machines. The yarn is fed in advance of the binder and cutter and the latter instrument has a horizontally movable notched element which alone is projectable within the needle circle to engage the yarn and pull it to the cutter and binder. C.

Ethylenic Polymer Films: Strengthening by Cold Drawing. E. I. du Pont de Nemours & Co. B.P.634,600; Appl. and filing 15/8/1947; Publ. 22/3/1950; U.S.A. appl. 16/8/1946. Films, strips, ribbons, etc. of co-polymers of ethylene and vinyl derivatives (*e.g.*, ethylene and vinyl acetate) in which some degree of molecular orientation has already been secured by cold drawing, are further strengthened (*e.g.*, by 70 per cent.) by re-drawing in a direction greater than 30° (*e.g.*, at right angles) to the initial orientation. C.

Piston-type Shuttle-checking Device. A. Zarn. B.P.634,782: Appl. and filing 10/10/1946; Publ. 29/3/1950; Swiss appl. 21/11/1945. The claim is for a shuttle-checking device for a loom, comprising a housing with a cylinder portion designed to receive a piston under thrust from the buffer head. The cylinder wall surrounds the piston with sufficient clearance that the outflow of the liquid is automatically throttled. The device can be adjusted for various working conditions by employing a liquid of the appropriate viscosity. C.

Straight-bar Knitting Machine Auxiliary Instrument Control and Stop-motion. W. Cotton Ltd., J. E. Lynam, and P. G. McCarthy. B.P.634,797: Appl. 28/4/1947; Filing 30/11/1948; Publ. 29/3/1950. A Cotton's patent or other straight-bar knitting machine having instruments that occupy a temporary attitude for periods during which normal knitting gives place to such functions as fashioning, picot edging, welt-turning, etc., is provided with an electric stop-motion responsive to failure of the instruments to revert from that attitude on resumption of normal knitting. Particulars are illustrated in four sheets of drawings that include a circuit diagram. C.

Elastic Knitted Fabric. G. Blackburn & Sons Ltd. and E. J. Towers. B.P. 634,830: Appl. 2/12/1947; Filing 18/12/1948; Publ. 29/3/1950. The claims relate to the production of 1-and-1 elastic ribbed fabric that will stretch in both wale and course directions, by using two sets of needles (conveniently on a circular rib knitting machine) and incorporating the rubber thread at spaced courses. Eight stitch diagrams are reproduced to show the ground structure and various patterning possibilities. C.

Heat-tenderable Rover and Draw Threads: Application in Making Lace Strips. J. G. Gaunt. B.P.634,913: Appl. and filing 1/4/1946; Publ. 29/3/1950. Lace strips may be made by weaving a lace web composed of a large number of strips linked by draw and rover threads and breaking or dissolving out these threads, according to their composition. The present invention claims the use of heat-tenderable threads (*e.g.*, of Vinyon or nylon) for the purpose and the specifica-

tion includes several suggestions for the local application of heat to the web, including an electrically heated hand tool. C.

Plastic-backed Pile Fabric Apparatus. S. C. Cull and W. I. Rodger. B.P. 634,944: Appl. 27/8/1947; Filing 26/8/1948; Publ. 29/3/1950. Apparatus for making pile fabric consists of a grid with parallel bars, means for drawing spaced parallel warp threads across the grid, moving blades for pushing loops of warp threads through the bars and against a backing material coated with an unset resin, means for setting the resin by heat while the loops are in contact, and a cutter for trimming the warp threads looped over the bars. The blades constitute one electrode of a high-frequency heating system and a platen under the backing material the other electrode. The warps may be spaced by means of a reed. C.

Warp Beam. Templewood Engineering Co. Ltd. and R. B. Wisbey. B.P. 634,974: Appl. and filing 4/2/1948; Publ. 29/3/1950. A warp beam for the loom has flanges that are screw-threaded to the barrel, and is equipped with a quick-release lock-ring also screw-threaded to the beam and connected to the flanges by circumferentially spaced locking screws. C.

Burned-out Nylon Yarn Patterned Fabrics: Production. Sayles Finishing Plants, Inc. B.P.635,157: Appl. and filing 8/8/1947; Publ. 5/4/1950; U.S.A. appl. 21/11/1944. Fabrics are woven of nylon and other yarns and printed according to a pattern with an agent that will "burn out" one component. For example, the nylon yarn may be dissolved by means of hot formic or acetic acid or phenol, a cellulosic yarn may be destroyed by carbonising, or an animal fibre yarn may be removed by treatment with alkali. C.

Automatic Loom Weft-replenishing Mechanism. Automatic Looms and Accessories Ltd. and E. H. Blackhurst. B.P.635,324: Appl. 24/1/1948; Filing 22/1/1949; Publ. 5/4/1950. In automatic weft-replenishing mechanism of the type in which a swivel actuates a transferrer connected to a hammer that ejects the lowermost cop in the magazine, it sometimes happens that if a cop becomes jammed the hammer breaks. To obviate this, it is now proposed to use cast iron for the pin that actuates the transferrer and to form it eccentrically on one end of a spindle mounted in a collar keyed to the hammer shaft. Jamming of a cop results in a less serious fracture. C.

Circular Knitting Machine Rubber Thread Feeding Device. G. Blackburn & Sons Ltd. and E. J. Towers. B.P.635,511: Appl. 29/11/1947; Filing 26/11/1948; Publ. 12/4/1950. A device for feeding one or more rubber threads at a circular knitting machine comprises a rotating disc (A) that frictionally drives a wheel (B) that drives two inter-engaging toothed wheels (C) between which the rubber threads pass. Wheels (B) and (C) are mounted on a member that is movable radially of disc (A). C.

Automatic Rotary Shuttle Box Loom Shuttle and Pirn. W. Pollard (1923) Ltd. and A. Lord. B.P.635,697: Appl. 19/12/1946; Filing 17/12/1947; Publ. 12/4/1950. The device is intended to replace a "dummy shuttle" for the purpose of stopping a rotary shuttle box loom when the active shuttles have been exhausted. The direction of the feeler slot in the pirn of the last shuttle, and a projection on the shuttle tongue, are so disposed that a solid portion of the pirn is presented to the weft feeler when the weft has been run off. C.

Loom Picking Mechanism. Grayson, Adam & Co. Ltd., E. Grayson and T. Adam. B.P.635,954: Appl. 12/11/1947; Filing 29/10/1948; Publ. 19/4/1950. Picking is effected by a spring-steel lever actuated through links by a pivotal member (carried by the sley) which strikes against a stop member after alternate beating-up movements of the sley The member comprises a rocking pin mounted in a side frame of the sley with its axis at right-angles to the pivotal axis of the sley, a lever coupled by links to the picking lever, and an arm on the pin having an adjustable roller that engages the stop member. C.

Axminster Loom Tube Frame Conveyor Systems: Control. W. H. Wakefield (to Crompton & Knowles Loom Works). U.S.P.2,521,430 of 5/9/1950. The greater part of the tube frame conveyor system is driven by a variable speed motor. Either direct or alternating current can be used. The conveyor system is composed of a short tight section driven by the pullover shaft and a longer tight section driven by the motor. These sections are connected by slack por-

tions forming wells. The conveyor system motor is regulated by a variable resistance unit, one part of which is moved by the pullover shaft in time with its tight section, and the other part of which is moved by the motor in time with the other tight section. Thus the speed of the conveyor system varies with the requirements of the pullover shaft during weaving. The resistance unit is constructed so that the pullover shaft and conveyor system motor can be reversed. W.

Pile Fabric. R. R. Cone and W. Lewis (to Riverside Mills). U.S.P.2,521,831 of 12/9/1950. The process produces a double pile fabric which is cut into two fabrics. Individual rows of tuft are first formed [rather like chenille tufts], presumably by winding individual pile ends in spiral form on rods and stitching "spacer elements" [presumably thick yarn] along the spiral thus formed at diametrically opposed positions. These spirals are flattened and fed side by side in an upright position through the fabric forming machine. This coats each edge of the spirals with adhesive, preferably natural or synthetic latex, lays on backing fabric of open texture, dries the adhesive, and then cuts the spirals at their centre to give two cut pile fabrics. W.

Axminster Needle Drive Mechanism. J. H. Pfau (to Alexander Smith & Sons Carpet Co.). U.S.P.2,524,734 of 3/10/1950. A drive with a reciprocating motion provides for a dwell when the needle reaches the end of its stroke. The dwell is sufficient to allow the drive mechanism to return to equilibrium before the time of shuttle contact. The needle position at the time of contact thus becomes independent of loom speed. W.

Axminster Needle Drive Mechanism. J. H. Pfau (to Alexander Smith & Sons Carpet Co.). U.S.P.2,524,735 of 3/10/1950. Snubber means are provided to oppose the advance of the needle, at least during the deceleration periods so that the effect of the flexibility of the drive or lost motion in the driving mechanism is eliminated. The snubber means acts to take up any lost motion in the connections and reverses the effect of the flexibility of the drive, in order to retard the needle thrust and bring the needle to rest at a predetermined point regardless of changes in operating speed. W.

4—CHEMICAL AND FINISHING PROCESSES

(A)—Preparatory Processes

Cellulose Acetate Warp Knit Fabric: Preparation for Dyeing. ("Preparation of Cellulose Acetate Warp Knitted Fabrics for Dyeing.") T. H. Hilliard. *Hosiery Times*, 1950, **23**, (260), 37-9. Discusses importance of careful handling of knitted fabric prior to dyeing, and describes briefly sewing of fabric into tubular form ready for processing, and the alternative method of pre-setting at full width. H—4A.

(B)—Boiling, Scouring, Degumming and Washing

Polymetaphosphate Efficiency: Determination by Means of Schwarzenbach "Complexones". ("Bestimmung der Wirksamkeit von Polymetaphosphaten unter Verwendung von sogenannten 'Schwarzenbachschen Komplexonen'.") J. Kubias. *Text. Rdsch.*, 1950, **5**, 224-232. The difficult task of estimating the efficiency of polymetaphosphates (*e.g.*, Calgon) in taking up metallic ions from solution, thus rendering these ions harmless from the textile processing angle, is best carried out by making use of the "Schwarzenbach Complexones" (*e.g.*, Trilon-A and -B). These complexones consist essentially of aminecarboxylic acids and their salts. The method of using them to determine, *e.g.*, the calcium ion concentration and hence the efficiency of the polymetaphosphate preparation, is described in detail. The effect of other substances, *e.g.*, orthophosphates and alkali carbonates, on this efficiency is also discussed. [20 references.] C—4B.

(D)—Milling

Hair: Felting; The Influence of Milling on Felt Formation. ("Entstehung des Haarfilzes und Einflusz der Walke auf die Filzbildung.") P. Hückel. *Melliand Textilber.*, 1950, **31**, 689-693. The processes that take place during carrotting and milling of rabbit hair are discussed in relation to the production of felting, together with various theories of the nature of felting of carrotted hairs. Berg's spontaneous curl test may be used as a measure of felting capacity of hairs, and tests carried out by this method using various types of milling agents showed that even satisfactorily carrotted hairs may not felt. A mathematical

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explanation is given of the effect on the curl process, of the diameter of the hair and the elasticity of its carrotted portion, and the phenomena of supercontraction and spontaneous curl are contrasted. W—4D.

(G)—BLEACHING

American Continuous Bleaching Systems. Anon. *Dyer*, 1950, 104, 155. The principles of the continuous bleaching systems for cotton textiles, now used widely in the United States, are briefly described. Most of these systems employ peroxide treatment, but a continuous hypochlorite process is also in use. C—4G.

(I)—DYEING

Wool: Application of Logwood. C. L. Bird and O. Newsome. *J. Soc. Dyers & Col.*, 1950, 66, 423-434. The fastness properties of logwood on various metallic mordants have been investigated. Fastness to light was studied in detail, and this included the effect of adding copper or iron to chrome mordants. The possibility of dyeing logwood blacks by a one-bath method based on the Bonser process was studied. The rate of exhaustion of hæmatin on various mordants was investigated by a colorimetric method, and the influence of the *pH* of the dyebath on the extent of exhaustion has been determined. The fastness properties of fustic on chromium and iron-chromium mordants, and the effect of fustic on the fastness properties of logwood black were also studied. W—4I.

Dyeing: Investigation of the Relationship between Amount of Dye Used and Colour Sensation Obtained and its Possible Application in Textile Dyeing. H. Cikurel. *Amer. Dyest. Rep.*, 1950, 39, P737-738. Dyeing samples of a wool fabric with acid dye has shown that there is a logarithmic relationship between amount of dye used and colour sensation obtained. This illustrates the application of the Weber-Fechner law to the colouring of textiles. In practice it can be used for calculating percentages of dye for dyeings at equal or other required psycho-physical intervals of depth of colour without recourse to modern colour theory or expensive optical instruments, provided the dye exhausts completely, or provided an allowance is made for incomplete exhaustion. W—4I.

Vat Dyestuffs for Wool. H. Luttringhaus. *Amer. Wool & Cotton Rep.*, 1950, 64, No. 38, 18-19, 23. A general review, which covers the historical aspect and recent developments, including continuous dyeing of raw wool with indigo, anthraquinones, Helindons, Indigosols, *etc.* W—4I.

Keratinous Protein Fibres: Oxidative Dyeing. ("The Dyeing of Wool with the Colourless 2:4:5-Trihydroxytoluene.") H. Burton and J. L. Stoves. *J. Soc. Dyers & Col.*, 1950, 66, 474-478. The effect of 2:4:5-trihydroxytoluene (I) on human skin, wool and hair without excluding oxygen is described. The application of (I) in aqueous solution to the skin produced a stain which darkened with time finally becoming brownish-black. It is suggested that (I) is oxidised to a quinone, disulphide linkages in the skin being simultaneously reduced to thiol. Quinones can readily add a molecule of thiol and the compound produced can be oxidised to a sulphur-containing quinone (II). The colour of the stain is believed to be due to a co-ordinated compound of (II) with iron in the skin or in the blood supply to the skin. With wool the above reaction can be separated into two stages. Treatment with (I) alone produces various brown shades believed to be due to the formation of (II). Simultaneous treatment with various metal salts causes a pronounced darkening of the shade, which becomes almost black with ferrous iron. Load-extension curve data on human hair fibres lend support to the view that thiol groups take part in the formation of new linkages. The fastness to rubbing of the shades is considered satisfactory. W—4I.

Chlorinated Wool: Dyeing. ("Fibre Properties in Relation to Knitwear Dyeing—21. Chlorination in Wool Colouring.") *Hosiery Times*, 1950, 23, (260), 60, 63, 73. Discusses the conditions necessary for dyeing chlorinated wool, and the effect of the conditions of chlorination of the wool. Effect of chlorination on dye absorption is considered, and the influence of chlorine concentration is also discussed. H—4I.

Synthetic Fibre Blends: Dyeing. ("Some Solutions to Problems of Dyeing Blends of New Synthetic Fibers as discussed at A.A.T.C.C. Meeting.") J. K. Novins. *Hosiery Underwear Rev.*, 1950, 33, (12), 141, 145. Discusses the dyeing of blends of Dynel/wool, spun Orlon, spun nylon/wool, spun nylon/cotton, and filament nylon/cotton. H—4I.

Chlorantine Fast Dyestuffs. R. Gunst. *Ciba Rev.*, 1950, No. 80, 2933-2936. The development of substantive dyes, leading to the production of the Chlorantine fast dyes, is briefly surveyed. C—4I.

Copper Phthalocyanine Finishes. E. C. Botti. *Offic. Dig. Fed. Paint Varn. Prod. Clubs*, 1950, No. 305, 408-417. From the results of investigations, information is presented on the formulation of copper phthalocyanine finishes (*e.g.*, Monastral Blue). Crystallization and flocculation of the pigment particles are discussed and tests for these faults given. In considering the formulation of copper phthalocyanine finishes (with reference to paint manufacture), mention is made of grinding methods, effect of solvents, and effect of vehicles. C—4I.

Jet-milled pigments. C. W. Moore. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 304, 373-380. In the jet-mill, grinding occurs while particles are being carried in an elastic fluid stream which is travelling about a ring shaped tube at speeds of 300 to 600 m.p.h. Ground particles obtained by means of the jet-mill are much finer and more uniform than those obtained by the usual commercial grinding methods. Photomicrographs are presented comparing jet-milled pigment particles with those ground by other means. C—4I.

(K)—FINISHING

Application of Resins to Textiles. ("Resins Can Improve Good Fabrics.") R. M. Fischer. *Papers Amer. Ass. Text. Tech.*, 1950, 5, 123-130. Some aspects of the use of resin finishes are discussed. Developments over the past twenty years, including the introduction of melamine resins are outlined. Melamine resin is very effective in controlling the shrinkage of wool and a new method of its application to wool has been developed. Other topics dealt with include the application of resins to sheer fabrics, cotton wrinkle resistance, and testing of crease resistance. (For abridged version see reference in *J. Textile Institute*, 1950, 41, A521 and A522.) C—4K.

Rayon Fabrics: Reduction of Shrinkage. Anon. *Dyer*, 1950, 104, 181, 183. Some methods for the reduction of shrinkage in rayon fabrics are briefly mentioned. These include the use of melamine-formaldehyde resins, glyoxal, alkali-soluble cellulose ethers, and alkalis. C—4K.

Polyvinyl Acetate Emulsions in Textile Finishing. J. Trevor. *Text. Rec.*, 1950, 68, August, 77. Polyvinyl acetate dispersions enhance the quality, handle, and appearance of many kinds of fabrics, particularly printed cotton goods. The advantages of the use of this finishing agent are summarised, and brief mention is made of the production and application of polyvinyl acetate emulsions. C—4K.

Carpets: Brushing, Sizing and Finishing. Newdegate Engineering and Designing Co. (Nuneaton) Ltd. *Text. Mfr.*, 1950, 76, 551. A carpet finishing machine is described and illustrated. It handles carpets 18 ft. 6 in. wide. The speed is infinitely variable from 1½ yd. to 6 yd. per min. The sequence of operations is as follows: brushing the pile and back with nylon bristles; steaming the back; sizing the back; brushing the size into the back; steaming and drying the pile; steam ironing the carpet. W—4K.

Wool: Application of s-Bisalkoxymethylureas (Dialkyl Ethers of Dimethylolurea). P. Alexander, D. Carter, and C. Earland. *J. Soc. Dyers & Col.*, 1950, 66, 579-583. The treatment of wool with condensates derived from dialkyl ethers of dimethylolurea and the methods for preparing these compounds are described. Although the derivatives of the lower ethers do not produce unshrinkability, the condensate from di-*n*-butyl ether (1) renders fabric unshrinkable with a deposit of less than 10 per cent. Microscopic examination of material treated with (1) indicates that there is abundant evidence of the bonding of fibres together by the polymer, and it is considered that the resins function by a "spot-welding" mechanism. Treated fabric possesses improved resistance to abrasion and treated yarn has increased tensile strength. W—4K.

Nylon Hosiery: Finishing. J. Koch, jr. *Hosiery Underwear Rev.*, 1950, 33, (11), 145-50. Report of paper to A.A.T.C.C. on dyeing and finishing of 15-denier nylon hosiery. Deals with conventional pre-boarding and Dunn system methods of heat setting, and their effect on dyeing, and discusses bagging and scouring, the dyeing of novelty hose having coloured heels, seams, *etc.*, and finishing treatments, with particular reference to nylonising. H—4K.

(M)—SUBSEQUENT PROCESSES

Automatic Packaging of Stockings. Strachan and Henshaw Ltd. *Text. Rec.*, 1950, **68**, August, 90; *Brit. Rayon & Silk J.*, 1950, **27**, September, 72. A brief description (with illustration) is given of the "Whitehall" stocking packaging machine. The machine automatically packs and seals the stockings in transparent foil bags at rates adjustable between 20 and 30 packages per minute. C—4M.

PATENTS

Disazo-pyrazolone Dyes: Production. Ciba Ltd. B.P.633,790 of 2/9/1947: 30/12/1949 (Conv. 27/9/1946 and 16/7/1947). The claims are for the production of a series of yellow to orange dyes for cellulosic materials, capable of metallisation and of discharge to pure whites by neutral or alkaline formaldehyde-sulphoxylates. Their general structure is represented by

$$R_1 \cdot N{:}N \cdot R_2 \cdot NH \cdot CO \cdot R_3 \cdot N{:}N\,Pyr.,$$

where R_1 is the residue of a salicylic acid, R_2 is a benzene or naphthalene residue to which the azo and NH groups are attached otherwise than in the *ortho*-position relatively to one another, R_3 is a benzene residue to which the azo and CO groups are attached otherwise than in the *ortho*-position, and Pyr. is a 5-pyrazolone free from NH_2 groups which is bound in the 4-position to the azo link and contains a hydrocarbon as substituent in position 3. Many of the examples include a sulphonic acid group as substituent in one of the aromatic nuclei. C.

Pigment Printing Paste Assistant. G. T. Douglas, A. Lowe, S. Robinson, W. Todd, and Imperial Chemical Industries Ltd. B.P.633,932 of 21/1/1948: 30/12/1949. [Addition to B.P.622,967.] The auxiliary agent

$$R(O \cdot CO \cdot NH \cdot CH_2 \cdot AX)_n$$

for pigment printing pastes covered by the parent specification is replaced by an agent of the type $(OH \cdot CH_2 \cdot NH \cdot CO \cdot O)_p \cdot R \cdot (O \cdot CO \cdot NH \cdot CH_2 \cdot AX)_m$, where R is an organic residue, preferably aliphatic, A is the group comprising an aliphatic or heterocyclic tertiary amine, X is the anion of an acid, and n, p and m are integers, m preferably being 1. An example is tristearin-11:11′-bis-(*N*-hydroxymethyl carbamate)-11″-carbamatomethylpyridinium chloride. The prints are fixed by drying and baking at 150° C. They are fast to rubbing. (See B.P. 622,967; *J. Textile Institute*, 1950, **41**, A76.) C.

Multi-colour Printing Machine. A. I. Sark. B.P.634,213: Appl. 24/4/1947; Filing 21/4/1948; Publ. 15/3/1950. The invention relates to a printing machine in which the dyes or pigments are part of the composition of the printing surface (roller or block) and on wetting give up colour to the material passing through the machine. A resilient impression surface is used, *e.g.*, a rubber cylinder filled with water. The pressure of the printing surface against the impression surface, and therefore the arc of contact if both are rollers, can be adjusted by suitable lever weighting. C.

Drum and Hot-air Nozzle Cloth Drying Machine. J. Dungler. B.P.634,322: Appl. and filing 15/5/1947; Publ. 15/3/1950; French appl. 23/5/1946 and 18/7/1946. A machine for drying cloth has a heated, rotary drum around which is grouped, at a short distance, a set of nozzles that blow hot air against the cloth as it travels over the drum. The drum may be fluid-tight and heated by hot air or steam, or perforated and combined with means for sucking hot air through the cloth. The various members are housed in a casing. C.

Cold-swelling Starch/Aldehyde Resin Finishing Composition. N.V. W. A. Scholten's Chemische Fabrieken. B.P.634,368; Appl. and filing 3/5/1946; Publ. 22/3/1950; Dutch appl. 20/6/1945. The claims are for a process for making dry starch preparations that dissolve in cold water but become insoluble when a solution is dried on a substrate. They are used as textile finishes or adhesives (*e.g.*, in veneering wood). Cold-swelling starch (modified by partial oxidation or hydrolysis) is blended with an aldehyde and a substance other than an aminotriazine that can react with it in known manner to form a resin. Thus, the modified starch may be mixed with methylolurea and acetic acid, or ordinary starch may be mixed with urea, then modified by heating, and subsequently mixed with paraformaldehyde and ammonium chloride. C.

Photo-electric Cloth Guiding Control for Stentering Machines. J. Dean. B.P. 634,375: Appl. 16/11/1946; Filing 14/11/1947; Publ. 22/3/1950. A photo-electric race guider for a stenter is arranged to respond to a beam of light projected from the edge of the cloth and to actuate electro-hydro thrusters when the cloth is not running true. The thrusters in turn move the grippers into correct registration. C.

Nylon-to-Nylon Adhesive. Imperial Chemical Industries Ltd. B.P.634,422: Appl. and filing 19/12/1947; Publ. 22/3/1950; Belgian appl. 24/10/1946. The joining of nylon to nylon is facilitated by the use as adhesive of a solution of nylon in a phenol, *e.g.*, "carbolic oil" or cresol. C.

Green Tetrakisazo Dyes. L. E. Jones (for J. R. Geigy Soc. Anon.). B.P.634,429: Appl. 21/1/1948; Filing 29/12/1948; Publ. 22/3/1950. The claims are for a series of green tetrakisazo dyes for cellulosic materials. The dyeings can be after-treated with formaldehyde or diazo-*p*-nitraniline to improve their fastness to washing. The steps in the manufacture of the dyes are (1) coupling a tetrazotised mono-(*m*- or *p*-aminobenzoyl)-*p*-phenylenediamine with 1 mol. of a salicylic acid derivative and 1 mol. of a 2-alkoxy-α-naphthylamine, (2) diazotising the resulting aminodiazo dye and coupling with either a 1-(*m*- or *p*-aminobenzoylamino)-8-hydroxynaphthalenesulphonic acid or other *p*-aminobenzoylamino-hydroxynaphthalenesulphonic acid capable of leading to binuclear naphthaquinones, and (3) diazotising the resulting aminotrisazo dye and coupling with a 1:3-dihydroxy-1:3-diamino-, or 1:3-hydroxyamino-derivative of the benzene series. Nine examples are given in detail. C.

Metallisable *o*-Hydroxymonoazo Dyes. Sandoz Ltd. B.P.634,488: Appl. and filing 23/1/1948; Publ. 22/3/1950; Swiss appl. 28/1/1947. The claim is for a series of metallisable *o*-hydroxymonoazo dyes (for wool) obtained by esterifying or etherifying the hydroxyl group in the *p*-position to the azo group in metal complexes of *o*-hydroxymonoazo dyes derived from *o*-diazophenols or *o*-diazonaphthols and resorcinol or β-resorcylic acid and removing the metal from the reaction product by means of acids or salts. Thirty examples are given. C.

Anthraquinone Acid Dyes. S. G. Bedekar and K. Venkataraman. B.P.634,645; Appl. and filing 26/8/1946; Publ. 22/3/1950; Indian appl. 26/2/1946. A new series of anthraquinone acid dyes is obtained by heating 2:4-dichloro-1-aminoanthraquinone with an amine (*e.g.*, aniline or *p*-toluidine), if desired in the presence of copper or a copper salt or an acid-binding agent, and sulphonating the product before or after purification. The examples refer to blue dyeings, on wool. C.

Cellulose Ether Plastics: Stabilisation. Hercules Powder Co. (assignees of R. W. Ivett and W. W. Koch). B.P.634,808: Appl. and filing 7/7/1947; Publ. 29/3/1950; U.S.A. appl. 26/2/1947. The invention relates to the addition of di-*iso*butylphenol to cellulose ethers for the purpose of securing moulded plastics that do not discolour or become brittle on exposure to light. Sulphur dioxide or, preferably, a compound that liberates it when heated in the moulding operation, may also be added. Typical agents of this type are the products obtained by condensing sodium bisulphite with maleic esters, some of which are known as "Aerosols". Butadiene sulphone is also claimed and a preferred mixture consists of 2 per cent. of di-*iso*butylphenol and 0·3 per cent. of this sulphone. C.

Anthraquinone Vat Dyes: Application. E. Marney and Imperial Chemical Industries Ltd. B.P.634,973: Appl. 4/2/1948; Filing 4/2/1949; Publ. 29/3/1950. Cellulosic textiles are continuously padded with a dispersion of the leuco derivative of an anthraquinone vat dye in neutral or acid medium and passed directly into alkali. The developed dyeing is then oxidised, soaped, and rinsed. C.

Pyruvic Aldehyde: Application in Dimensional Stabilisation of Cellulosic Textiles. R. J. Smith, C. D. Weston, and Imperial Chemical Industries Ltd. B.P.635,034: Appl. 2/1/1948; Filing 31/12/1948; Publ. 29/3/1950. Cellulosic materials (especially regenerated cellulose yarns and fabrics) are rendered resistant to shrinkage in laundering by impregnation with a solution or dispersion of pyruvic aldehyde containing an organic acid (*e.g.*, oxalic), followed by stentering and heating at 120–160° C. The cellulose becomes insoluble in cuprammonium hydroxide solution. C.

Cellulose Esters and Ethers: Dyeing with Indigoid Vat Dyes. British Celanese Ltd. B.P.635,310: Appl. and filing 26/9/1947; Publ. 5/4/1950; U.S.A. appl. 2/10/1946. Cellulose ester or ether materials are impregnated (*e.g.*, by padding) with an aqueous suspension of an indigoid dye, dried, impregnated with a solution of a formaldehyde sulphoxylate rendered alkaline with a hydroxy aliphatic amine (*e.g.*, diethanolamine), steamed to effect reduction of the dye to the leuco form, and steeped in an oxidising bath (*e.g.*, dichromate and acetic acid) to regenerate the parent dye. C.

Asymmetrical Disazo Dyes: Production. Ciba Ltd. B.P.635,621: Appl. and filing 7/3/1947; Publ. 12/4/1950; Swiss appl. 8/3/1946 and 30/1/1947. The claims relate to a series of asymmetrical disazo dyes obtained by coupling tetrazotised 3:3′-dihydroxy-4:4′-diaminodiphenyl in two stages differing in the *pH* of the medium to an extent at least as great as that between acetic acid and alkali carbonate or alkali carbonate and alkali hydroxide. The examples refer to bluish-red dyeings on cotton that can be improved in fastness by coppering. C.

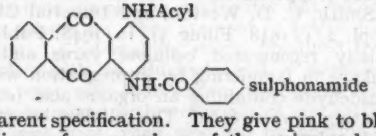
Crease- and Fire-resistant Fibres, Yarns and Fabrics: Production. Courtaulds Ltd. and T. H. Morton. B.P.634,690: Appl. 22/8/1947 and 16/4/1948; Filing 20/8/1948; Publ. 22/3/1950. Cellulosic (viscose or cotton) and protein (wool) materials are rendered crease- and fire-resistant by impregnation with a solution containing a non-volatile mineral acid (phosphoric, phosphamic, sulphuric, sulphamic) and cyanamide, followed by drying and baking. The proportions, times and temperatures are such that a reaction product of cellulose (or protein) and cyanamide is formed. Ten examples are given of the application of the process to viscose rayon fabric, staple, and tow, cotton fabric, and woollen fabric. Some viscose products are reported to contain 3, 4, or 5·5 per cent. of combined nitrogen and 9-10 per cent. of combined phosphoric acid. C.

Nylon Stocking Boarding Machine. Etablissements M. Heliot S.a.R.L. B.P. 635,722: Appl. and filing 6/6/1947; Publ. 12/4/1950; French appl. 29/7/1946. A machine for boarding nylon stockings comprises a rotary plate carrying the formers and co-operating with an autoclave which is in two parts, one above and the other below the plate. The plate is triangular with rounded corners and rotates around a tubular upright. The lower half of the autoclave is rigid and provided with feed pipes for steam or other vapour and a cylinder and piston arrangement for lifting the upper, body part. The stockings are handled on the formers outside the autoclave. C.

Stencil Printing Machine. J. I. Marek and L. Steinberg. B.P.635,744: Appl. 31/10/1947; Filing 21/7/1948; Publ. 12/4/1950. In a machine for the stencil printing of textiles, the intermittent movement of the belt between printing operations is effected by means adjacent to the side edges of the belt that carries the fabric and which engage this belt when the stencil frames are raised and are disengaged when the stencil frames are lowered into a new position. Details are shown in five sheets of machine drawings. C.

Permanent Glazed Chintz: Production. J. Bancroft & Sons Co. B.P.635,923: Appl. and filing 10/7/1947; Publ. 19/4/1950; French appl. 1/4/1939. The specification briefly reviews the processing of the "Everglaze" chintzes and points out that rather large amounts of albumin have been used to secure superior strength in the finished fabrics. It is now proposed to replace albumin by a sulphonated oil (*e.g.*, sulphonated castor oil). This also prevents sticking of the fabric to the calender rollers. A typical impregnating bath contains a ammonium phosphate 1·25, ethylcellulose 1·5, and water to make 100 parts. C. urea-formaldehyde pre-condensate 12·5 parts, sulphonated castor oil 7·5,

Sulphonamidobenzoylamino-anthraquinone Vat Dyes: Production. Ciba Ltd. B.P.635,924: Appl. and filing 10/7/1947; Publ. 19/4/1950; Swiss appl. 11/7/1946 and 11/6/1947. [Addition to B.P.605,466.] The invention relates to the production of a series of vat dyes of the general formula

(II) 

by the process of the parent specification. They give pink to bluish pink dyeings on cotton. A list is given of 24 members of the series under the headings (1)

nature of the acyl group, (2) substituents for ring (II), (3) nature of the sulphonamide group, (4) colour in concentrated sulphuric acid, (5) colour of the vat, and (6) colour of the soaped dyeing on cotton. C.

Wool: Imparting Shrink Resistance. H. F. Clapham and A. L. Smith. U.S.P. 2,499,987 of 7/3/1950. A hypohalite solution containing 1-6¾ per cent. available halogen is applied to the fabric for about 5 seconds, at room temperature and under conditions in which no reaction occurs. The temperature is then immediately increased to 200°-220° F., and the fabric treated for not more than 15 min., during which time the reaction takes place. This continuous, stepwise process results in even treatment, minimum damage to the fabric and minimum reduction in area of the fabric after laundering. The process is unsuitable for use with enzymes, which would be ineffective at high temperature. W.

Wool Shrinkproofing Baths Containing Butadiene Copolymers. J. B. Rust. U.S.P.2,514,517 of 11/7/1950. The preparation is described of emulsions of copolymers of a butadiene 1·3 and a vinyl ester, the reaction being carried out in a closed vessel under pressure, at *pH* 7-11 and in the presence of a polymerisation catalyst. The polymer is made non-tacky by oxidative pre-vulcanization. For shrinkproofing wool, the bath contains 1-25 per cent. of copolymer based on the weight of the wool, and a conditioning electrolyte to allow the deposition of the copolymer on the fibres. Examples relate to the preparation of vinyl acetate and vinyl chloride butadiene copolymer emulsions and to their application to wool goods. The shrinkproofing obtained is more pronounced with vinyl chloride than with vinyl acetate emulsions. W.

Wool Dyed with Chromed Azo Dyes: After-treatment with an Aldehyde. W. Widmer and A. Buehler (to Ciba Ltd.). U.S.P.2,516,496 of 25/7/1950. Wool dyed with pre-metallised acid dyes containing an ortho-amino-ortho'-hydroxy-azo grouping is after-treated with an aldehyde, *e.g.*, 1-6 per cent. of formaldehyde or 2-8 per cent. of a benzaldehyde sulphonic acid. The shades are brightened to the same extent as when aldehydes are present in the dyebath. Since the treatment is carried out at temperatures below the boil, troubles due to volatilisation are reduced. W.

Pile Fabric Floor Coverings: Frayproofing. J. N. Dow and A. T. Dildilian (to Bigelow-Sanford Carpet Co. Inc.). U.S.P.2,517,389 of 1/8/1950. A film consisting of a thermoplastic adhesive and a solvent, is applied to the back of the fabric, which is then heated, preferably by ironing, to make the adhesive sufficiently fluid to penetrate to the base of the pile loops. After cooling, the pile loops resist fraying when cut. W.

Wool: Modification with Beta-Propiolactone. H. W. Jones and H. P. Lundgren (to the U.S.A. as represented by the Secretary of Agriculture). U.S.P.2,517,573 of 8/8/1950. Dried wool is treated, preferably at room temperature, with at least 0·3 part of beta-propiolactone per part of wool. The reaction can take place in solution, in an inert organic solvent, or in the vapour phase; it is continued until the nitrogen content of the wool is reduced to about 12 per cent. The modified wool is washed to remove excess reagent. Wool combines with beta-propiolactone without destroying its polypeptide chains. The scale structure is retained, but the fibre diameter is increased by about 30 per cent. The modified wool is softer and whiter than natural wool; it also acquires a sheen and loses some of its natural kinkiness; its felting property is increased. W.

Wool: Improving Properties. L. Maaskant (to Amer. Enka Corporation). U.S.P. 2,519,842 of 22/8/1950. Wool is immersed at 40°-45° C. in about 5 per cent. of an acid precondensation product of formaldehyde with resorcinol or with substituted resorcinols; after centrifuging and drying, it is hardened by heating for about 30 min. at about 105° C. The product is absorbed by the fibres, which are chemically modified, and therefore have increased pliability and no tendency to stick together. Examples show that the treatment decreases fabric shrinkage, increases strength, and also increases resistance to abrasion and to acid, chlorine, alkalis and moths. (See also B.P.639,155; these abstracts, 1950, A422.) W.

Wool and Wool Fabrics: Shrinkproofing. E. N. Angus and J. W. Creely (to Eavenson & Levering Co.) and R. M. Fischer (to Amer. Cyanamid Co.). U.S.P. 2,522,338 of 12/9/1950. Wool is impregnated with a thermosetting resin solution, preferably methylated methylol melamine; dried; made into yarn or cloth, and then cured. By this method, fibre displacement in manufacture does not

cause loss of shrinkage control. The impregnating bath is stabilized by omitting the catalyst. Better shrinkage control is obtained if sulphur dioxide or other acid gaseous catalysts are used instead of diammonium phosphate. W.

Chlorinated Wool Fabric: Relaxing. A. Guttman and D. Guttman. U.S.P. 2,525,543 of 10/10/1950. Chlorinated wool fabric is tumbled in warm water for about 7 min. at 60°-90° F., preferably at about 75° F., hydro-extracted by means of a centrifuge, and then dried by tumbling in hot air for about 20 min. at 100°-140° F., preferably at about 120° F. The water may contain a detergent. Superior dimensional stability is obtained. Chlorinated wool jersey for women's blouses is washable if treated in this way. W.

Casein Fibres: Imparting Felting Properties. R. F. Peterson and R. W. Jackson (to the U.S.A., as represented by the Secretary of Agriculture). U.S.P. 2,525,825 of 17/10/1950. The felting properties of casein fibres, especially those containing metals producing insoluble basic salts, are improved by chemical hardening under tension before drying. The fibres are restrained from linear shrinkage by drying under tension, after preliminary treatment in a wash bath at *pH* 6-8. The hardened fibres may be partially acetylated to increase the resistance to hot dyebaths and to reduce dye uptake. The improved fibres are cut into staple length, mixed with fur fibres and subjected to known felting processes. W.

Moth-proofing Preparations. Merck & Co. Inc. B.P.642,248 of 30/8/1950. A wash-fast moth-proofing composition comprises a water-soluble silicofluoride and a vinyl acetate resin to serve as a binder. The mothicide used is preferably either "Amuno" or "Amuno" 51, the composition of these being stated. Wool fabric is impregnated with an aqueous solution or emulsion in which the concentration of moth-proofing composition is approximately twice that finally desired; the fabric is then squeezed to approximately 50 per cent. moisture retention, dried, and if desired baked to polymerise the resin. Proofed fabric is substantially unaffected by exposure to black carpet beetle larvæ. W.

Felt Hats, Muffs and like Articles: Automatic Forming Machine for Manufacture. M. Cassé. B.P.643,137 of 15/9/1950. Perforated formers are mounted on movable supports to enable the hood to be moved from the horizontal forming position into a vertical spraying and hardening position. A final inversion of the hood facilitates removal. W.

Textile Fibres: Treatment. Wolsey Ltd. B.P.644,213 of 4/10/1950. The fastness to water and washing of dyed materials consisting of or containing protein fibres is increased by treatment, preferably before dyeing, with a ¼-1 per cent. aqueous solution of epichlorhydrin containing not more than 1 per cent. of a strong electrolyte, *e.g.*, borax, sodium chloride or sulphuric acid, calculated by weight on the weight of the solution. Treatment is preferably done at 80°-95° C. and at *pH* 1·5-3 or 8-9·5. The weight of the wool and the resistance to abrasion are also increased. An increase in weight of 10 per cent., permanent to washing, can be achieved without affecting the handle. W.

Milling Fabric. E. B. Bates. B.P.644,649 of 18/10/1950. Fabric in the form of an endless band is passed repeatedly through a rotary milling machine. At successive passes of the band through the machine the length of the band at that pass is measured, progressive reduction in length is observed, and the milling is stopped when the measurement drops to a predetermined value. A feeler responds to the passage of a local thickness in the fabric, *e.g.*, the seam joining the ends of the fabric. A length-indicator is driven by or in conformity with a measuring roller, the feeler causing the resetting of the indicator. A time measurement is obtained by a "stop-watch" mechanism which is started, stopped and reset by the feeler. A safety device may be incorporated to operate when the machine is run empty. W.

Felt Hardening Machine. Merrimac Hat Corporation. B.P.646,064 of 15/11/1950. The machine is automatic and produces uniform hardening of hollow felt bodies while supported in their natural shape. Oscillating hardening mechanism is provided. A stream of air which flows between the support and the felt body prevents the formation of creases in the felt. W.

Felt Hardening Machine. Merrimac Hat Corporation. B.P.646,718 of 29/11/1950. The machine hardens hat bodies while supported in their natural shape. The tip and sides, and also the inner and outer surfaces of the hat body are simultaneously hardened, thus avoiding wrinkling and creasing. Less skill is required than for operating the conventional flat plate machines. W.

Wool Fabrics: Stiffening. Trubenised Ltd. and E. Higgins. B.P.646,930 of 29/11/1950. Tailored wool garments are stiffened by using an interlining of woollen yarns knitted or woven with yarns of cellulose acetate or other thermoplastic material. The weave or mesh is open, with about 32 strands per inch in both warp and weft. The woollen yarns are between 39s and 27s worsted count, and the cellulose acetate yarns are twofold to give the same effective diameter, *i.e.*, 200-300 denier. The interlining is homogeneous in structure, and differential expansion by heat, moisture, shrinkage and felting, with consequent loss of shape due to wear and to cleaning, is avoided. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Wool: Testing for Damage. M. V. Glynn. *Text. J. Austral.*, 1950, 25, 442-444. Difficulties encountered in testing wool for damage are discussed, with particular reference to the factors to be considered in the correct selection of test. Tests using various staining reagents are described. The alkali solubility test is not universally applicable, and there are difficulties connected with the type of test which involves the measurement of a specific chemical property of the fibre. The terms "damage" and "modification" should be clarified. W—5A.

Wool Fibre Fineness: Determination by the Projection Microscope. (Tentative Textile Specification No. 20, 1950.) *J. Textile Institute*, 1950, 41, S11-S15. The principle of the method is the optical projection of a lengthwise image of short pieces of fibre on to a screen and the measurement and recording of the width of these images by a graduated ruler. Details of the apparatus required, preparation of material (raw wool, top or yarn) and measurement technique are given. W—5A.

Wool-destroying Fungus—*Ctenomyces* Species. S. R. Sen Gupta, S. S. Nigam and R. N. Tandan. *Text. Res. J.*, 1950, 20, 671-675. A species of *Ctenomyces* has been isolated from damaged wool material. The morphology, nature of growth, and other characteristics of the species are described. Its remarkable capacity for deteriorating wool material makes it suitable for use as a test organism for determining the efficiency of rotproofing treatments on wool. W—5A.

Damage in Wool: Examination. A. D. J. Meeuse. *Meded. Vezelinstituut T.N.O.*, 1950, No. 97, Part III and Supplement (in English). A qualitative method based on microscopical examination in certain reagents for determining the cause of damage in wool is described. After examination of the fibres in water, their behaviour in a solution of potassium hydroxide in ammonia or in saturated bromine water is next observed. Solutions of Methylene Blue, Methyl Orange, hæmatin and Benzo-purpurin 4B are used for staining tests. Details are given of the performance of these tests, and, to demonstrate their usefulness, typical examples of damage are discussed. The supplement contains photomicrographs of various types of damage, graphs and tables of results obtained with the different tests on fibres damaged by known treatment, and a table outlining the sequence of the tests. (For previous parts, see these Abstracts, 1950, A364.) W—5A.

Wool: Chemical Testing. M. Lipson. *Text. J. Austral.*, 1950, 25, 428-430. Methods of chemical testing in raw wool scouring are described. Reference is also made to chemical tests in wool oiling, and in the analysis of fibre mixtures. W—5A.

(B)—Yarns

Cotton Quality and Yarn Strength. R. W. Webb and H. B. Richardson. *Text. Wkly*, 1950, 46, 422, 424, 426, 428; 486, 488, 490. A summary is presented of information obtained from a study of the relation of six elements of raw cotton quality to the strength of 22s and 50s count long-draft yarn. The six properties are upper-half mean fibre length, uniformity ratio, fibre fineness, fibre tensile strength, percentage of mature fibres, and grade of cotton. A series of

statistical values for the relationships representing the entire group of 828 cottons studied and for each sub-group, is summarised. Multiple correlation coefficients (R), the percentage of variance in yarn strength ($R^2 \times 100$), and the standard error in yarn strength measurement (S) are reported. (The value of R represents the percentage of total variance in strength that is explained by the six fibre properties—in some cases as high as 92 per cent.) Correlation regression equations are given representing the relationship between the strength of 22s and 50s carded yarn (long draft) and the above six fibre properties. The use of these equations to obtain an estimate of yarn strength from fibre properties is illustrated by examples. The statistical values representing multiple correlation between six fibre properties and respective skein strengths are compared for the 22s and 50s carded yarn. C—**5B.**

Nylon Yarn: Dyeing Properties; Measurement and Correlation with Orientation. A. R. Munden and H. J. Palmer. *J. Textile Institute*, 1950, 41, P609-633. Dyeing rate, equilibrium dye uptake, and penetration rate have been studied with anionic and dispersed acetate dyestuffs on a range of "66" nylon samples of various degrees of orientation. Differences in the appearance of dyed nylon fabrics produced by irregularities in orientation are shown to be primarily dependent on differences in dyeing rate. A routine method of assessing the magnitude of within-package variations in orientation is described. [20 references.] C—**5B.**

Some Effects of Yarn Irregularity in Dyeing and Finishing. R. G. Fargher, H. M. Taylor, and F. W. Thomas. *J. Textile Institute*, 1950, 41, P590-604. In considering the effects of yarn irregularities in dyeing and finishing, the authors deal only with those irregularities introduced during spinning which are the more frequent sources of disagreement between spinners, manufacturers, and finishers. Weight irregularity, which may be the most frequent source of defective appearance in dyed or finished cloths, is dealt with as it affects sizing and desizing and dyeing. The effects of twist irregularity, of variations in cotton characters (mainly reducing power as measured by the "insoluble" copper number), and of neppiness are also dealt with. The paper is followed by a discussion. C—**5B.**

Viscose Rayon Yarn Irregularities: Effect on Fabrics. R. A. McFarlane. *J. Textile Institute*, 1950, 41, P566-589. Examples of true and apparent yarn irregularities are discussed with particular reference to viscose rayon fabrics. The number of irregularities present in the finished fabric caused during fibre manufacture is small compared with the number caused during yarn processing and weaving, although the effects may be cumulative. According to the method of processing adopted, the dyer and finisher often can increase or decrease the prominence of yarn irregularity and apparent yarn irregularity in the finished fabric. C—**5B.**

Knitted Structures: Defects due to Yarn Irregularities. E. M. Walker and C. E. Sleath. *J. Textile Institute*, 1950, 41, P599-563. A brief survey is presented of some practical aspects of the defects in knitted structures due to yarn irregularities. The following are covered: (*a*) the influence of certain irregularities on the economic factor, (*b*) the easing of certain defects by routine laboratory testing, (*c*) defects due to physical irregularities in the preparation or spinning of the fibres, (*d*) the influence of storage conditions on certain yarn defects, (*e*) defects due to after-treatment of yarns (*i.e.*, scouring, dyeing, *etc.*). C—**5B.**

Fine-Gauge Fashioned Hosiery: Effect of Yarn Irregularities. H. Unwin and J. W. Reast. *J. Textile Institute*, 1950, 41, P547-556. Both the yarn and the manner in which it is wound have a profound influence on knitting. The qualities or characteristics required of a knitting yarn are enumerated and the effect of method of winding is discussed. Thirty-three yarn faults and irregularities are classified as follows: (*a*) irregularities in yarn and winding which are visible on the cone before it is put on the knitting machine, (*b*) irregularities in yarn and winding not visible before knitting, (*c*) faults in hosiery readily seen during knitting or in the hose before dyeing, and (*d*) faults in hosiery not readily visible until after the dyeing and finishing processes. C—**5B.**

Silk Yarns: Inherent and Processing Irregularities. V. Castle. *J. Textile Institute*, 1950, 41, P534-544. Some inherent and processing irregularities of silk yarns are discussed under the headings: regularity, soaking, degumming, lousiness, and weighting. C—**5B.**

Linen Yarns: Importance of Regularity. T. Bleakley. *J. Textile Institute*, 1950, 41, P526-532. The author discusses briefly the importance of regularity in linen yarns. Reasons for the present day demand for higher quality yarns are considered. Some faults peculiar to linen yarns are described. **C—5B.**

Irregularity of Flax Roves and Yarns: Methods of Measurement. J. A. Matthew, N. B. Rajchenbaum, and J. L. Spencer-Smith. *J. Textile Institute*, 1950, 41, P486-500. The paper describes briefly some of the methods for measuring and expressing the irregularity of flax slivers, roves, and yarns, and discusses the general requirements of irregularity testers both for routine and reseach purposes. The following testers are described: (*a*) A mechanical tester for slivers and roves which measures and records the thickness of the sliver under compression in a slot at regular intervals along the length; (*b*) A simple tester which measures the diameter of hard-twisted yarns between rollers under a light compression; (*c*) An electronic capacitance tester for slivers and roves; (*d*) A photoelectric tester. Integrators for evaluating the percentage coefficient of variation are also described for each tester. The method of expressing the results of tests is discussed. A bibliography is given of different methods of measuring irregularity. **C—5B.**

Yarn Irregularity Measurement: Photometric Method; Comparison With Other Methods. W. J. Onions, J. Pickering, and W. Stables. *J. Textile Institute*, 1950, 41, P480-485. The Chamberlain photometer for the measurement of yarn irregularity is briefly described and results of correlation experiments, using weight-length measurements for comparison are summarised. The effects of yarn twist, yarn construction, and surface fibres on the photometric measurements are discussed. In addition to comparison with the weight-length method, the photometric method has been compared with the Wool Industries Research Association roving levelness tester. **C—5B.**

The Vitno-Integrator: Construction and Application to Measurement of Levelness of Yarns. F. H. Germans. *J. Textile Institute*, 1950, 41, P467-475. An illustrated description is given of an electrostatic integrator for measuring the sum or the integral of statistically important numbers and its application to the measurement of levelness of yarns is discussed. **C—5B.**

Sliver, Roving, and Yarn Irregularity: Electronic Measurement. P. H. Walker. *J. Textile Institute*, 1950, 41, P446-466. The determination of the irregularity of sliver, rovings, and yarns by electronic means depends on the measurement of the change of capacity of a condenser of which the sliver, *etc.*, forms the dielectric. This capacity change can be measured by using either resonant circuits or an A.C. capacity bridge. The two methods are compared briefly, and the Fielden bridge circuit (A.C. capacity bridge type) is outlined. A new instrument based on the Fielden bridge circuit has been developed, and a fairly extensive description of it is given, including details of the electronic circuits, the condenser unit, recording instruments, and operation. An investigation of the correlation between data obtained with the instrument and data obtained by length-weight measurements, is reported. Typical recordings are shown of cotton slivers, rovings, and yarns. A note on the effect of variation in moisture content on the readings is included. **C—5B.**

Minimum Breaking Strength and Assessment of Yarn Irregularity. H. P. Stout. *J. Textile Institute*, 1950, 41, P433-442. The relationship between the minimum strength of a yarn and the average strength and irregularity of strength is discussed from the mathematical point of view. The minimum strength of a yarn provides a suitable index of the maximum tension to which yarn should be subjected when being unwound from a spool. A practical measure of minimum strength is given by the average strength minus three times the standard deviation of strength, these quantities being determined on test specimens of any convenient length. Variation in breaking strength is an important factor in determining the minimum strength of a yarn and a very regular yarn can afford to have a lower average strength than a less regular one. In all practical applications where strength is the most important property, the irregularity of a yarn is better expressed in terms of irregularity of strength than in terms of irregularity of weight. The determination of the standard deviation of strength of short lengths of yarn from the breaks under two different tensions may provide a useful means of assessing irregularity under widely different conditions of loading. **C—5B.**

Cotton Yarns: Irregularity; Causes. G. A. R. Foster. *J. Textile Institute*, 1950, 41, P357-373. The causes of irregularity in cotton yarns are outlined. The principal causes are (i) random fibre arrangements, (ii) irregular drafting of the shorter fibres, which produces the drafting wave, (iii) draw-frame sliver irregularity, and (iv) irregular winding at the speed and spinning frames. C—5B.

Yarn Irregularity: Causes. J. G. Martindale. *J. Textile Institute*, 1950, 41, P340-356. A brief review is given of work which has been done during the last 20 years to investigate the causes of irregularity in yarn. Variations in weight per unit length are attributed to (i) properties of raw materials, (ii) inherent shortcomings in yarn making and preparatory machinery, (iii) mechanically defective machinery, and (iv) external causes due to working conditions and inefficient operation. [23 references.] C—5B.

(C)—Fabrics

Dyeings and Prints: Fastness to Drops of Water. ("Bestimmung der Wassertropfenechtheit von Färbungen und Drucken.") Swiss Society for Testing Technical Materials. *Text. Rdsch.*, 1950, 5, 239. Details are given of the Swiss standard method, SVMT 25–A 2513 for testing the fastness of dyed and printed textiles of all kinds to drops of water. Changes of shade are measured according to the method prescribed in SVMT 25–A 2540. C—5C.

Dyeings and Prints: Fastness to Alkalis. ("Bestimmung der Alkaliechtheit von Färbungen und Drucken.") Swiss Society for Testing Technical Materials. *Text. Rdsch.*, 1950, 5, 241. A method for testing the fastness of textile materials of all kinds to alkalis is defined in Swiss standard method SVMT 35–A2546. C—5C.

Textile Materials: Capillarity. ("Bestimmung der Saugfähigkeit.") Swiss Society for Testing Technical Materials. *Text. Rdsch.*, 1950, 5, 242. The Swiss standard method of test, SVMT 25–D 1346, is described; it is used for determining the capillary efficiency of woven fabrics and netting. C—5C.

Dyeings and Prints: Fastness to Acids. ("Bestimmung der Säureechtheit von Färbungen und Drucken.") Swiss Society for Testing Technical Materials. *Text. Rdsch.*, 1950, 5, 240. The Swiss standard method of test, SVMT 25–A 2541 for determining the fastness of dyed and printed textile materials to acids is described. The method is applicable to all types of fibres. C—5C.

(D)—Other Materials

Wetting of Pigments. G. Marwedel. *Farbe u. Lack*, 1949, 55, 228-233 (through *Brit. Chem. Abstr.*, 1950, C., 262). A layer (about 4 mm. thick) of a stiff paste of pigment and medium is spread on a porous tile. This is placed on a balance pan counterpoised to give the desired wetting pressure (p). The paste is compressed by means of a second, smaller tile until p is just exceeded. The overflow of paste is removed and excess of medium is absorbed by the tile. The compressed portions of several tests are analysed together. C—5D.

Wool: Tests in Dyeing and Finishing. M. Lipson. *Text. J. Austral.*, 1950, 25, 439-440. Tests used during dyeing and finishing are briefly described, together with tests made on the final product, *e.g.*, fastness to washing and light, resistance to shrinkage, water-proofing and moth-proofing. W—5C.

Wool Fabrics: Defects. ("Problems Investigated by Research Association.") Wool Industries Research Association. *Wool Rec.*, 1950, 78, 1501-1502. Work carried out in connection with the cause and prevention of different defects in cloth manufacture is described. The defects mentioned include those due to creeling and warping methods, warp and weft tension and periodic faults. W—5C.

7—LAUNDERING AND DRY-CLEANING

Soap and Detergents as Affecting Textiles. F. D. Snell. *Papers Amer. Ass. Text. Tech.*, 1950, 5, 155-161; *Amer. Dyest. Rep.*, 1950, 39, 481-484. The basic principles of surface action are briefly explained. The structure and behaviour of surface-active agents, wetting, and types of surface-active agents and their advantages and disadvantages are covered. Detergency is then discussed, dealing with detergent builders, the effect of soil mixture and of fabric on the efficiency of detergents, and the washing ability of soap and synthetic detergents.

Reference is made to Launder-Ometer tests. Textile applications of surface-active agents are indicated. C—7.

Evaluation of Detergents. C. T. Snell. *Papers Amer. Ass. Text. Tech.*, 1950, 5, 151-154; *Amer. Dyest. Rep.*, 1950, 39, 485-487. The general nature of synthetic detergents is briefly reviewed. The following methods of evaluating detergents are discussed: (i) surface tension measurement, (ii) interfacial tension measurement, (iii) measurement of dispersing power, (iv) measurement of wetting power, and (v) washing tests. C—7.

Pure Soap Detergent Solutions: Suspending Power. A. S. Weatherburn, G. R. F. Rose, and C. H. Bayley. *Canad. J. Res.*, 1950, **28, F,** 213-225. The ability of soaps to prevent the deposition of carbon black and other materials on fabric during the detergent process has been investigated. In general, the suspending power of the soap solutions studied increased rapidly with increasing soap concentration, and reached a maximum at a relatively low concentration. At higher concentrations the suspending power either remained constant or decreased slightly. With various soiling materials, differences were encountered, not only in the magnitude of the indicated suspending power, but also in the form of the curve obtained on plotting suspending power against soap concentration. Increasing temperatures caused a decrease in the suspending power of the lower chain-length soaps (C_{12}, C_{14}) and an increase in the suspending power of the longer chain soaps (C_{16}, C_{18}). The suspending power of sodium oleate was essentially unchanged by the temperature variations over the range 25-80° C. C—7.

PATENTS

Washer Hydro. L. M. Kahn. B.P.608,246 of 13/9/48. When a rotary washing machine is used as a hydro-extractor there is usually excessive vibration and a small cylinder must be used. In this invention a piston-like member is normally disposed at one end of the cylinder during the washing operation, but is automatically moved along the cylinder during hydro-extraction, so as to reduce the volume and concentrate the articles at one end, the final position being determined by the volume of the articles. After hydro-extraction, the member is returned to its first position and heated air is circulated through the cylinder to fluff dry the articles. La—7.

Automatic Folder. Harry DeForest Abell and Homer Eugene Abell. B.P. 635,226 of 5/4/50. At the front of this machine there is a set of carrier tapes or feed bands forming a receiving table. A flatwork article placed on these carrier tapes travels into the machine and is gripped between this lower set of carrier tapes and an upper set which passes round a roller immediately above the point where the article enters the machine. While still held between these two sets of tapes, the article is carried upwards for some distance, then across towards the back of the machine and finally downwards. At a certain point on the downward path, the second set of carrier tapes passes round a roller and leaves the leading portion of the article hanging freely. Slightly below this level there is a set of blades which can move horizontally between the first set of carrier tapes and push the flatwork article towards the back of the machine so that it is caught in the nip of another pair of rollers, thus forming a crosswise fold in the article. The machine is fitted with a device which is tripped when the leading edge of the article passes over it and which is released when the trailing edge passes. This trip is connected to a control mechanism which drives the blades forward at the moment when the middle of the article is opposite to the blades, thus allowing for articles of various sizes all to be folded automatically at the mid-point. The rollers in which the fold is gripped are also fitted with carrier tapes and form part of a similar folding assembly which makes a second crosswise fold in the article. La—7.

Tumbler. Lovell Manufacturing Co., U.S.A. B.P.640,512 of 19/7/50. Two thermostats are fitted to a tumbler driven by an individual motor and equipped with electrical heating. One thermostat is located in the exhaust duct and automatically turns off the electric heating circuit when the temperature of the exhaust air rises at the end of the drying cycle. The second thermostat is mounted on the casing of the tumbler and controls the driving motor which continues to run until the case has cooled sufficiently. It is claimed that this cooling makes it easier to handle the goods and obviates the risk of spontaneous combustion of articles removed from the tumbler at too high a temperature. La—7.

Marking Machine. Tilletts' Cotton Marking Co. B.P.640,756 of 26/7/50. This device is fitted to an ordinary sewing machine to enable a line of stitching in coloured thread to be made in the form of a laundry mark. Enlarged stencils of the required letters and numbers are set up in a frame and are traced round with a needle which forms part of a pantograph. As the needle is moved, a reduced copy of the pattern is stitched into the article. La—7.

Washing Machine. Isaac Braithwaite & Sons. B.P.640,974 of 2/8/50. In a machine of the type in which an inner cylinder rotates on a horizontal axis within a cage, the case is divided into two sections by an annular wall extending inwards towards the cage. Liquid is supplied to one section of the case and the portion of the cage enclosed by this section is not perforated. It is, however, fitted with baffles, each of which is provided with scoops which pick up liquid from the case and transfer it through the baffles to the load within the cage. The remaining portion of the cage has perforated walls through which the liquid can escape into the other section of the case from which it is allowed to drain or is pumped away. La—7.

Calenders. Manlove, Alliott & Co. and W. A. Hastie. B.P.641,014 of 2/8/50. The roller-beds of a multi-roller ironing machine are separated by a much more substantial distance than usual, the space being filled by a "gap" piece having a smooth upper surface against which the work is held throughout its passage from one bed to the next. Tapes run continuously round the rollers and are so arranged that passage of work is not impeded. The "gap" is a standard-supported steam chest 18–24 in. wide, the roller separation being 30–36 in. While work is passing over the "gap" some of the moisture vaporised by the previous roller is allowed to escape and the partial drying is claimed to produce a better finish. La—7.

Washing Machine. B. Morton and J. H. Perkins (U.S.A.). B.P.642,603 of 6/9/50. A spherical clothes-container is supported by two hollow trunnions so that it can rotate on a substantially horizontal axis. A flexible rubber lining conforms closely with the wall and is secured to it in fluid tight connection at its rim. Water can enter or leave the container through one of the trunnions while the other trunnion communicates with the space between the wall and the rubber lining. When fluid pressure is applied through this second trunnion, the rubber lining is compressed and the washing fluid is squeezed from the clothes. La—7.

Bleach Supply Control. Baker Perkins Ltd. B.P.643,116 of 15/9/50. Bleach liquor is automatically introduced into a washing machine in dilute form by means of a venturi-type suction pump made of glass or other non-corrosive material placed in the water supply pipe. The chamber of this pump communicates with a bleach container previously filled with the required amount of bleach by the operator, and this bleach is drawn into the machine when water flows through the pump. In this way no undiluted bleach can be introduced into the machine. La—7.

Garment Press. J. & J. Simpson. B.P.643,270 of 15/9/50. A tubular spindle mounted in taper-roller bearings near its upper and lower ends carries the table at its upper end. Two concentric steam pipes which pass through this spindle and rotate with it are provided with suitable stuffing boxes at the lower end. The inner steam pipe serves as a steam outlet and the space between the two as a steam inlet. La—7.

Garment Press. J. & J. Simpson. B.P.643,285 of 15/9/50. A twin press is described of the type in which two tables are mounted to rotate horizontally so that either table can be brought under, and then raised into contact with, the fixed hand. Fluid pressure is applied in a cylinder to a piston which operates a rack and pinion to rotate the tables. During the turning stroke the pinion is positively coupled to the carrier of the tables, but it is subsequently disengaged by means of a clutch to allow the piston to be returned to its original position. The turning movement of the tables is controlled and checked by the action of a dash-pot. A ram is so arranged that it can raise one table into contact with the head. The whole cycle of lowering one table from the head, rotating the tables and raising the second table is initiated and automatically completed when the single control device is operated once. La—7.

Garment Press. R. G. Whitaker Ltd., and J. R. S. Richardson. B.P.643,951 of 27/9/50. A pneumatic timing device automatically opens the press after it has been closed for a pre-arranged length of time. Variation of the time of delay is

obtained by adjusting a needle valve which controls the flow of air into a timing chamber. All the necessary components are assembled into a single unit capable of application to existing presses. La—7.

8—BUILDING AND ENGINEERING

(A)—Construction and Maintenance of Buildings and Plant

Nylon Spinning Factory in Wales. Anon. *Archt. Rev.*, 1949, **105**, 216-222 (through *Building Sci. Abstr.*, 1949, **22**, 211). Some details are given of the design and construction of a nylon spinning factory at Pontypool. C—8A.

Carding Machines: Production. A. E. Williams. *Engineer*, 1950, **190**, 235-237. Special engineering features of the production of carding machines (by Platt Brothers and Co., Ltd.) are described. C—8A.

Instability of Springs. J. A. Haringx. *Philips Tech. Rev.*, 1950, **11**, 245-251. Some properties of helical springs, rubber rods, and flat spiral springs are discussed in their relation to buckling. The relative compression at which the spring of circular cross section buckles depends only on the ratio of the length to the diameter of the spring (its "slenderness") and on the manner in which its ends are fixed. There is a minimum slenderness below which the spring does not buckle even in the fully compressed state. A second transition from the stable to the unstable state occurs at a compression greater than the original length of the spring. (See *J. Textile Institute*, 1950, **41**, A140.) C—8A.

Acicular Cast Iron in Textile Machinery. Anon. *Nickel Bull.*, 1950, **23**, 78-80; *Text. Wkly*, 1950, **46**, 232, 234. The use of acicular cast iron for the fabrication of textile machinery parts is discussed with particular reference to the nickel-molybdenum acicular cast iron employed for the picking shaft and components of the "Picanol" automatic loom. This alloy has a high strength and is particularly resistant to impact. C—8A.

Baking Oven for Crease-Resisting Finishes. Hunt and Moscrop Ltd. *Text. Rec.*, 1950, **68**, August, 92. Brief details are given of a gas-fired baking oven for the heat-polymerisation of resins used to impart crease resistance to fabrics. Hot air (at 300° F.) circulates round the resin-impregnated fabric as it is passed through the oven at approximately 40 yards per minute. C—8A.

Ball Mills: Optimum Operating Conditions. F. Appell. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 303, 315-322. The mode of operation of ball mills is briefly explained and optimum working conditions are discussed. The evaluation of grinding efficiency, factors affecting mill performance, and load and grinding speed are covered, with reference to the literature. The emphasis is on the grinding of paint. C—8A.

(D)—Power Transmission

Rope Drives. P. W. Peel. *Text. Wkly*, 1950, **46**, 436, 438, 440. Some aspects of power transmission by rope drives are discussed. These include advantages over belts, rope-drive systems, pulleys, and wear. C—8D.

Wool Card: Synchronous Drive. See Section 2A. W—8D.

(F)—Lighting

Acrylic Enclosures for Flameproof Lighting Equipment. P. H. Colins and W. E. Harper. *Trans. Illum. Engng Soc.*, 1950, **15**, 137-172. Many flameproof lighting fittings used in large-scale coal-face lighting trials have enclosures made of the acrylic plastic polymethyl methacrylate. The paper describes investigations of the mechanical, thermal, optical, and physical properties of methacrylate plastic, and the effect of various factors on these properties. From the data obtained, it has been possible to make recommendations for the design of methacrylate plastic enclosures for flameproof light fittings. C—8F.

Lighting in the Textile Industry. H. Hewitt. *Light & Ltg*, 1950, **43**, 210-213. A summary is given of a paper delivered at the Summer Meeting of the Illuminating Engineering Society dealing with lighting for the textile industry. The paper deals briefly with lighting in all branches of the textile industries, from work on raw materials to the display of finished articles in the shops. A discussion following the paper is reported. C—8F.

Cotton Mill Lighting. J. D. Ducker. *Text. Rec.*, 1950, 68, August, 89-90. Some considerations involved in the lighting of a cotton mill are briefly dealt with. These include lighting requirements, avoidance of glare, card room and ring spinning requirements, and maintenance and costs. C—8F.

(G)—Heating, Ventilation, and Humidification

Unit Air Conditioners. L. Walter. *Text. Rec.*, 1950, 68, August, 68-70. A brief illustrated account is given of the advantages, construction, and applications of air conditioning units. These small units may be used in offices and homes, etc., or can be built up into larger, composite installations for textile and other mills. C—8G.

(I)—Waste Disposal

Synthetic Detergents and Sewage Processing. (I) Introduction. M. Elton. *J. and Proc. Inst. Sewage Purification*, 1949, Part 3, pp. 351-354. The increasing importance of synthetic detergents is discussed. A table summarises the present consumption of synthetic detergents in U.S.A., Canada, U.K. and France, and the estimated 1952 consumption in relation to the total soap market. The U.S.A., U.K. and Holland are compared as regards the rate of water and of synthetic detergent consumption, thus indicating the concentration of synthetic detergents likely to occur in industrial and domestic sewage. The possible deleterious effects of synthetic detergents on sewage processing are summarised. Critical concentrations are not likely to be approached except in textile districts in Yorkshire. W—8I.

Synthetic Detergents and Sewage Processing. (II) Sedimentation of Sewage, etc. A. Sciver. *J. and Proc. Inst. Sewage Purification*, 1949, Part 3, pp. 354-359. Laboratory experiments on the effect of "Teepol" (an anionic detergent containing 20-21 per cent. of active material in the form of sodium secondary alkyl sulphates) on the sedimentation of sewage are described. Concentrations of 40-100 p.p.m. of "Teepol" showed a progressively adverse effect on sedimentation. This range of concentrations is 4-10 times higher than the maximum expected to be presented in sewage within the next five years. W—8I.

Synthetic Detergents and Sewage Processing. (III) Production of Methane from Sewage Sludge. P. N. Degens, junr., H. van der Zee, J. D. Kommer and A. H. Kamphuis. *J. and Proc. Inst. Sewage Purification*, 1949, Part 3, pp. 359-365. The influence of various synthetic detergents on the methane fermentation of mixtures of raw primary and secondary sludge and on the drying of digested sludge has been studied. The critical concentration of detergents was 500 p.p.m. active material both for methane fermentation in the raw sludge and for the filterability of digested sludge. W—8I.

Synthetic Detergents and Sewage Processing. (IV) Processing of Sewage Containing Wool Scouring Liquors, etc. H. C. Evans and P. A. Winsor. *J. and Proc. Inst. Sewage Purification*, 1949, Part 3, pp. 365-370. The influence of "Teepol", a sodium secondary alkyl sulphate, on the cracking of wool scouring liquor and on the processing of sewage containing a high proportion of wool scouring liquor, has been studied. Replacement of soap by "Teepol" would cause no difficulty in acid cracking if "Alumino-ferric" were added prior to acidification. In the case of Bradford sewage, an appreciable increase in the use of "Teepol" would be necessary before difficulties occurred in sewage processing; if such difficulties did occur, the use of "Alumino-ferric" as an auxiliary precipitant is recommended. W—8I.

Patents

Humidity Automatic Control Apparatus. J. Stone & Co. Ltd., F. H. E. Read, and W. M. Smith. B.P.634,204: Appl. 30/4/1947 and 21/4/1948; Filing 23/4/1948; Publ. 15/3/1950. The invention relates to means for the automatic control of humidity in air-conditioning or pressure-ventilation systems, in which the responsive elements are thermostats, exposed respectively to the dry- and wet-bulb temperatures, and each biased by a heating element the circuit of which can be periodically interrupted by cyclic action of the dry-bulb thermostat, the temperature settings of the thermostats, without bias, being so selected that at the required relative humidity they respond in unison. Deviation from the required relative humidity results in unequal response and this is utilised,

through a relay, to effect appropriate change in the humidity-controlling mechanism. The specification makes 19 claims and is illustrated by five sheets of circuit diagrams. C.

Wool Wax Alcohols: Isolation of Cholesterol. Organon Laboratories Ltd. and C. L. Hewett. B.P.646,227 of 15/11/1950. Cholesterol is isolated from wool wax alcohols by separating iso-cholesterol by known means and then removing wax-like impurities by selective crystallisation of the cholesterol from a simple fatty acid, *e.g.*, acetic acid, at 20°-25° C., or by selective dissolution of the impurity in the same medium at 30°-35° C. The yield may be more than twice the 6-7 per cent. hitherto obtained. W.

Wool Fat: Recovery by Breaking Emulsions. R. Shawcross. U.S.P.2,522,140 of 12/9/1950. Wool grease can be recovered economically by passing wool wash water through a bed of a granular hydrogen ion-exchange resin in its acid form. The wool grease and protein are precipitated on the bed and the wool grease is extracted by periodic washing of the bed with a solvent. The ion-exchange material is treated with acid to make it fit for re-use, and the solvent is also recovered. The analysis of the pure lanolin obtained is given. The process may be used for treatment of other industrial waste waters, *e.g.*, stock water; in the fish industry. W.

Axminster Loom Tube Frame Conveyor Systems. See Section 3, Patents. W.

9—SCIENCE

Adaptive Production of Amylase and Lipase by Three Species of Fungi. J. J. Goodman. *Science*, 1950, 112, 176-179. The adaptive production of amylase and lipase by three fungi has been observed. Sucrose and soluble starch were compared as carbon sources of amylase production, and sucrose was compared with mazola corn-oil as a carbon source for lipase production. The amylase activity of the fungi grown on starch was much greater than that of fungi grown on a sucrose substrate. A similar result was obtained with lipase, the activity being the greater for growth on the corn-oil medium. C—9.

α-Amylase: Isolation and Crystallisation from Human Pancreas. ("Isolement et cristallisation de l'α-amylase de pancréas humain.") E. H. Fischer, F. Duckert, and P. Bernfeld. *Helv. chim. Acta.*, 1950, 33, 1060-1064. A method for the purification of α-amylase obtained from the human pancreas is described. The enzyme has been crystallised and recrystallised after a 45—50-fold concentration of the crude material. Electrophoretic measurements have shown that the material obtained consists of a single substance which is considered to be pure human pancreas α-amylase. C—9.

α-Amylase from Human Pancreas: Properties. ("Propriétés de l' α-amylase de pancréas humain.") P. Bernfeld, F. Duckert, and E. H. Fischer. *Helv. chim. Acta*, 1950, 33, 1064-1070. The properties of crystallised α-amylase obtained from human pancreas are described. They are identical with those of α-amylase from human saliva (as shown by electrophoretic measurements). The amylase from the human pancreas is different from that of pig's pancreas. Photographs of the crystals of α-amylase from the above three sources are shown. C—9.

Enzymes: Applications in Textiles. J. Pfannmuller and A. Noe. *Amer. Dyest. Rep.*, 1950, 39, 490-496. The characteristics and catalysing of enzymes are briefly explained. The difference between carbohydrate- and protein-splitting enzymes and the characteristics of these two types are discussed with reference to their application in the field of textiles. The action of enzymes on starch is considered, including the action of α- and β-amylase, use of α-amylase in desizing, effect of temperature on desizing, measurement of enzyme strength by means of a liquefying power test (on a starch substitute), and tests to determine the efficiency of "washing out" after desizing. The action of proteases in the desizing of gelatin-treated rayon and synthetic yarns, the effect of *pH* on this action, and one method for testing gelatin-splitting enzymes are briefly discussed. C—9.

Proteins: Determination of Molecular Weights in Spread Monolayers. H. B. Bull. *J. Biol. Chem.*, 1950, 185, 27-28. An equation of state for spread films of protein in the low-pressure region has been derived. Pressure-area measurements on films of egg albumin and other proteins have been made in the low-

pressure region and under a variety of conditions. Under certain conditions some films, including those of egg albumin, do not give linear *PA–A* graphs (where *P* is pressure and *A* area). It is suggested that protein molecules can exist on the surface in an expanded and in a compact state. The area occupied by the protein molecules on the surface has been calculated as a function of the film pressure for several conditions. The film molecular weights calculated for the proteins studied are in good agreement with the molecular weights of these proteins in solution. C—9.

A Rapid Concentrating Still. W. E. Van Heyningen. *Brit. J. Exptl. Path.*, 1949, **30**, 302-305 (through *Amer. Chem. Abstr.*, 1950, **44**, 7093). A circulating evaporator is described which evaporates water at a rate of 12–14 litres per hours at 35° C. and 20-30 mm. of mercury pressure. C—9.

Schlieren Diagram Analysis: Reference Wedge. H. Hoch. *Nature*, 1950, **166**, 402-403. A glass wedge, interposed between light source and camera, is used to obtain a base line for *Schlieren* diagram analysis. Brief details of the system are given and two typical diagrams with base lines obtained as described, are shown. C—9.

Separation of Amino-acids, Peptides, and Proteins: Micro-Technique. ("A Microelectrophoretic and Microionophoretic Technique.") E. L. Durrum. *J. Amer. Chem. Soc.*, 1950, **72**, 2943-2948. A micro-technique for the separation of amino-acids, peptides, and proteins has been developed. The technique is carried out by applying an electrical potential across the ends of strips of filter paper saturated with electrolyte solution. At some intermediate position of these strips, the mixture to be separated is applied. The course of separations is followed in the case of amino-acids and peptides by ninhydrin treatment, in the case of protein separations by coagulation and selective dyeing *in situ*, and in the case of radioactive components by autoradiography. Several photographs showing the appearance of the paper strips during separations of various mixtures are given. C—9.

Organic Acids: Separation. C. S. Marvel and R. D. Rands, jun. *J. Amer. Chem. Soc.*, 1950, **72**, 2642-2646. A procedure for the separation of water-soluble organic acids using partition chromatography is described. The method is suitable for qualitative and quantitative determination of acids in mixtures. The "peak effluent volumes" of thirty-six acids as determined by a standard procedure are listed. Mixtures containing acids of such closely related structures as *o*-, *m*-, and *p*-hydroxybenzoic acids, lactic and glycollic acids, or adipic, glutaric, succinic, malonic, and oxalic acids are easily separated. C—9.

Anthraquinone Pigments: Separation by Paper Chromatography. S. Shibata, M. Takito, and O. Tanaka. *J. Amer. Chem. Soc.*, 1950, **72**, 2789-2790. The procedures for the separation and identification by paper chromatography of several synthetic and natural hydroxyanthraquinones, and for the determination of Rf-values are described. Some Rf-values of hydroxyanthraquinones are tabulated. The relationship between these values and their structures is briefly discussed. C—9.

Filter-Paper Chromatography: Extraction of Sugars from the Paper at Room Temperature. R. A. Laidlaw and S. G. Reid. *Nature*, 1950, **166**, 476-477. A simple procedure for the extraction of sugars, at room temperature, from paper chromatograms has been devised. The paper strip is suspended and water is introduced at the top of the paper by means of a capillary dropper. The rate of flow is such that about 5 c.c. of eluate are collected in half an hour. The method has been tested by experiments with D-xylose, D-ribose, D-galactose, D-fructose, L-rhamnose, and D-glucose. C—9.

Kjeldahl Micro-determination: Improvements. R. M. Silverstein and R. Perthel, jun. *Analyt. Chem.*, 1950, **22**, 949-950. Three improvements with respect to accuracy and convenience in the micro-Kjeldahl procedure have been made, *viz.*, (i) sucking-back is eliminated by means of a simple, all-glass check valve on the steam generator, (ii) slightly low nitrogen values are improved by use of a special ammonia trap (the Goessman trap), and (iii) a simplified titration procedure is employed. The titration is carried out with potassium bi-iodate solution. Brief experimental details of these modifications are given. C—9.

Volatile Fatty Acids: Micro-analysis. F. V. Gray. *J. Coun. sci. industr. Res. Aust.*, 1948, 21, 347-351 (through *Brit. Chem. Abstr.*, 1950, C., 232). In mixtures of formic, acetic, propionic, and butyric acids, formic and butyric acids are determined separately and the amounts of acetic and propionic acids are calculated from measurements of the total carbon and total acid present. Analyses may be made on 10 mg. of mixed fatty acids. The Van Slyke manometric method is employed for formic acid and the Klinc micro-iodometric method for butyric acid. Total carbon is determined by the manometric method of Van Slyke and Folch. C—9.

Phosphonitrile Chloride: Some Polymeric Derivations. C. J. Brown. *J. Polymer Sci.*, 1950, 5, 465-471. The reactions of phosphonitrile chloride with phenols and substituted amides have been investigated. Some of the substances formed polymerise readily to give high-boiling oils or thermoplastic resins. A new reaction has been found to occur between phosphonitrile chloride and certain substituted anilides, *e.g.*, acetanilide and diphenylurea. Equations for these reactions are suggested. The phosphonitrile radicle behaves as a unit of high stability with chromophoric potentialities, readily giving rise to chain polymers. C—9.

New Enol Glucosides of β-Hydroxy Carbonyl Compounds. C. E. Ballou and K. P. Link. *J. Amer. Chem. Soc.*, 1950, 72, 3147-3152. The preparation of the β-D-glucoside of enolic ethyl acetoacetate is described. It was isolated in both *cis* and *trans* forms. Glucosides of other activated ketones have been prepared by the same method. To show that the two products obtained from ethyl acetoacetate were *cis–trans* forms of a β-D-glucoside, the double bond in each was reduced with palladium and hydrogen. The identical glucoside of ethyl β-hydroxybutyrate was obtained in each case. Further proof was obtained by direct synthesis of the glucoside of ethyl β-hydroxybutyrate and comparison with the reduction products of the *cis–trans* forms of the β-D-glucoside. The lability to alkali of the various glucosides was determined by noting the ease with which they reduced Benedict solution. This lability was correlated with the negativity of the respective carbonyl groups. C—9.

Dextran: Periodate Oxidation. A. Jeanes and C. A. Wilham. *J. Amer. Chem. Soc.*, 1950, 72, 2655-2657. Conditions are described for the oxidation of dextran with sodium metaperiodate at 25° C., and for the measurement of the formic acid produced. The results obtained give a measure of the ratio of 1:4- to 1:6-glycosidically linked anhydropyranose units present and appear to be in good agreement with those from the methylation procedure. C—9.

Carboxymethylcellulose in Aqueous Solution: Structure. ("Sur la structure des solutions aqueuses de carboxymethylcellulose.") G. Dürig and A. Banderet. *Helv. chim. Acta*, 1950, 33, 1106-1118. Two carboxymethylcelluloses having nearly the same molecular characteristics (degree of substitution and polymerisation) have been studied. Their very different rheological behaviours have been explained by the fact that they contain very different proportions of an insoluble fraction that swells considerably in water. This fraction is partially crystallised and still retains, to a small extent, the plant structure of the cellulose from which it originated. Carboxymethylcelluloses are characterised much more by the micellar state than by molecular magnitudes. Evidence has been obtained for molecular association by ionised carboxymethyl groups, so that in solutions of carboxymethylcellulose two forms of molecular association exist, the one amorphous and arising spontaneously from the ionised groups, and the other crystalline and stable but not arising spontaneously. C—9.

Ageing of Solutions of Cellulose Nitrate. H. Campbell and P. Johnson. *J. Polymer Sci.*, 1950, 5, 443-463. The ageing of cellulose nitrate solutions in acetone and other solvents, has been studied under various conditions by following the decrease of viscosity with time. The effects of the following factors have been investigated: (i) variations in original cellulose, (ii) degree and method of nitration, (iii) non-solvents and precipitants, (iv) temperature, and (v) impurities and antioxidants. Viscosity-time (ageing) curves are generally characterised by an initial rapid decrease in viscosity, followed by a slow continuous decrease. Ultramicroscopic aggregates were not observed and structural viscosity was absent throughout both ageing processes. Possible explanations for the rapid and the slow ageing processes are suggested. C—9.

Hydrolysed Cellulose Acetate: Estimation of Primary Hydroxyl Groups. C. J. Malm, L. J. Tanghe, and B. C. Laird. *J. Amer. Chem. Soc.*, 1950, 72, 2674-2678. The primary hydroxyl contents of hydrolysed cellulose acetates of different acetyl contents have been determined by reaction with trityl chloride in presence of pyridine. The percentage of primary hydroxyl is influenced by the amount of water in the hydrolysis bath, but is not affected by the temperature, or by the amount and nature of the catalyst during the hydrolysis. The amount of sulphuric acid catalyst in the esterification influences the percentage of primary hydroxyl in the early part of the hydrolysis. C—9.

Autoxidation of Drying Oils. W. O. Lundberg. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 302, 199-211. Some recent developments in the chemistry of the autoxidation of substances related to drying oils are discussed. The author deals with (*a*) free radical chain mechanisms, (*b*) accelerators of autoxidation, (*c*) photo-oxidation in presence of photosensitive pigments, (*d*) autoxidation of conjugated systems, (*e*) secondary products of oxidation, (*f*) techniques employed in study of autoxidation, and (*g*) scope for further research. [43 references.] C—9.

Drying Oils. G. Fearnley. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 301, 157-160. Natural fats or oils are usually divided into three groups, *viz.*, drying oils, semi-drying oils, and non-drying oils, according to degree of unsaturation. This and other means of classification are briefly discussed. The chemical identity of drying oils is simply explained. Some theories that have been put forward to explain the mechanism of drying of oil films are briefly indicated. C—9.

Linseed-Oil Stand Oil: Catalysed and Uncatalysed Boiling; Investigation by Ultra-violet Spectroscopy. ("Untersuchung einer katalysierten Leinölstandölkochung unter Heranziehung der Ultraviolettspektrographie.") A. Maschka and A. Mendl. *J. Polymer Sci.*, 1950, 5, 429-442. Laboratory-style boilings of linseed-oil stand-oil with and without catalyst in an atmosphere of carbon dioxide, as well as a boiling of linseed-oil varnish and linseed-oil stand-oil varnish are investigated. Besides the usual characteristics, the ultra-violet absorption spectra of each sample are determined and from this the amount of the intermediate systems with double and triple conjugated bonds are calculated. From the results it is concluded that the succession of reactions described as probable in the literature (conjugation of isolated double bonds, intra- and intermolecular polymerisation, respectively, as in a diene Diels-Alder synthesis) also occurs in the catalysed process. An attempt is made to derive the importance of transesterification for the increase of the viscosity (molecular weight) from the increase in viscosity and the decrease in iodine value. C—9.

Ninhydrin: Purification by Crystallisation. P. B. Hamilton and P. J. Ortiz. *Analyt. Chem.*, 1950, 22, 948-949. A convenient but efficient procedure for the purification (by crystallisation from dilute hydrochloric acid solution) of ninhydrin is described. C—9.

^{14}C-Carboxy-labelled Tyrosine and Di-iodotyrosine: Synthesis. R. B. Loftfield. *J. Amer. Chem. Soc.*, 1950, 72, 2499-2500. A new synthesis of *dl*-tyrosine has been developed and applied to the preparation of ^{14}C-carboxy-labelled *dl*-tyrosine and -di-iodotyrosine. C—9.

Amino-resins. C. D. Thurmond. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 304, 381-388. A brief review is given of amino-resins with respect to their use as coating materials. The author deals with their chemistry, characteristics, mechanism of cure, properties (of importance as coating materials), and applications. Melamine and urea resins are compared. C—9.

Colloidal Systems: Measurement of *pH*, Ion Activities, and Membrane Potentials. H. Jenny, T. R. Nielsen, N. T. Coleman, and D. E. Williams. *Science*, 1950, 112, 164-167. In measurements of *pH* and ion activity (involving liquid junctions) made in true solutions, the liquid junction potential is probably negligible. This is not necessarily true for systems containing a great number of electrically charged particles of extremely high valency, *e.g.*, large clay and resin particles. A theory is developed, supported by experimental data, showing that in certain colloidal systems liquid junction potentials may assume considerable magnitudes. C—9.

Plastification of Cellulose Derivatives: Mechanism. G. Champetier. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 300, 77-81. The mechanism of the plastification of cellulose derivatives may be investigated by X-ray diffraction studies of nitrocellulose-acetone systems, but the method is limited, because acetone, due to its volatility, cannot be considered as a lacquer plasticiser. In order to study the absorption of true plasticisers, a method has been adopted that consists in the examination of the ternary system constituted by the cellulose derivative, the plasticiser, and a solvent of the latter. The quantity of plasticiser and the quantity of solvent, respectively, present in proportion to the same quantity of cellulose derivative are determined. The ternary system is represented by a point on the graph obtained by plotting the ratio plasticiser/cellulose derivative against that of solvent/cellulose derivative. The method has been applied to the systems tributyl phosphate; nitrocellulose, tricresyl phosphate: nitrocellulose, and triphenyl phosphate: cellulose acetate, the solvent in each case being carbon tetrachlorine. Results are summarised and discussed. C—9.

Protective Coatings Industry: Physical Chemical Research. R. H. Kienle. *Offic. Digest Fed. Paint Varn. Prod. Clubs*, 1950, No. 300, 11-52. A full report of the first Joseph J. Mattiello Lecture of the Federation of Paint and Varnish Production Clubs (U.S.A.) is presented. The subject of the paper is centred around physical chemical investigations and research methods on protective coatings (paints, varnishes, resin finishes, etc.). Solvents, vehicles, and pigments are considered in turn, most attention being paid to pigments. The author considers (*a*) viscosity-concentration relations of pigments, (*b*) effect of crystal structure of pigments on rheological behaviour, (*c*) average particle size of pigments and its measurement, (*d*) surface structure of pigment particles and effect of surface coatings, (*e*) strength development of pigments, and (*f*) colour and gloss, their measurement, and factors on which they depend. Photomicrographs and electron micrographs of many pigment particles are shown. [51 references.] C—9.

Polystyrene: Diffusion in Different Solvents. P. Z. Adelstein and C. A. Winkler. *Canad J. Res.*, 1950, **28, B**, 194-206. The diffusion of polystyrene in various solvents has been studied in order to obtain information about the way in which changes in rate of diffusion of a high polymer may reflect changes in its shape in different solvents. The effects of the following factors on the diffusion coefficient of polystyrene have been investigated: (i) molecular weight, (ii) concentration, (iii) solvent (molecular shape and solvent power, degree of solvation, and solvent mixtures), and (iv) temperature. The apparatus used is described and results are presented and discussed. Solvents include methylethyl ketone, bromobenzene, and toluene. C—9.

Flowing Junction Diffusion Cells: Testing by Interference Methods. L. G. Longsworth. *Rev. Sci. Instrum.*, 1950, **21**, 524-528. The construction and manipulation of two diffusion cells, one of glass and the other of stainless steel, are described. In both cells the initially sharp boundary is formed by allowing solution and solvent to flow together into a narrow horizontal exit slit in the side wall of the diffusion channel. These cells have been tested by diffusion measurements with the aid of the Gouy interference method. With the metal cell, an interference method that gives the refractive index directly as a function of the height has also been studied. C—9.

Nitrocellulose: Interaction With Some Solvents. R. H. Blaker and R. M. Badger. *J. Amer. Chem. Soc.*, 1950, **72**, 3129-3132. The thermodynamic interaction between nitrocellulose and several substances, both solvents and non-solvents, has been investigated by light scattering observations on acetone solutions of polymer to which the substance in question was added. The additives (*n*-butyl acetate, diethyl phthalate, water, ligroin, *s*-butyl chloride) were all found to be selectively adsorbed on nitrocellulose. An expression is given for the activity of nitrocellulose as a function of its concentration and of the solvent additive. C—9.

Adsorption of Water Vapour by High Polymers: Application of Polarisation Theory. S. R. Hoover and E. F. Mellon. *J. Amer. Chem. Soc.*, 1950, **72**, 2562-2566. The equation $\ln p_0/p = K_2K_1^a$ (where p_0/p is the relative vapour pressure, a is the amount adsorbed, and K_1 and K_2 are functions of several factors including temperature) fits the experimental data for the sorption of

water vapour on a variety of high polymers. These include cotton, mercerised cotton, nylon, viscose rayon, silk, and wool, and results are presented as straight-line functions (log log p_o/p against $a\log K_1$). The application of the equation to the absorption of water on polar groups, and the value of the linear relationship in analysing absorption data are discussed. C—9.

Adsorption of Krypton and Nitrogen on Polyethylene, Nylon, and Collagen. A. C. Zettlemoyer, A. Chand, and E. Gamble. *J. Amer. Chem. Soc.*, 1950, 72, 2752-2757. The adsorption of nitrogen and krypton on polyethylene has been measured, at both liquid-nitrogen and liquid-oxygen temperatures. For nylon and collagen, krypton adsorption has been measured at the two temperatures and nitrogen adsorption at one temperature. The adsorption isotherms are typical Type II curves except for a gradual break where the monolayer is completed. The adsorption data yielded to BET analysis, and it is concluded that the BET theory gives a satisfactory method for investigating the surface areas of organic solids with non-polar gases. The thermodynamic functions for the adsorptions have been calculated. (See also Emmett and De Witt, *J. Textile Institute*, 1941, 32, A178.) C—9.

Absorption of Acid Dyes on Nylon. F. C. McGrew and A. K. Schneider. *J. Amer. Chem. Soc.*, 1950, 72, 2547-2552. Evidence is presented to confirm the mechanism of attachment of acid dyes to nylon at moderate *pH* levels as consisting of a salt-type linkage between the basic amine ends of the polymer chain and the sulphonic acid groups of the dye. The quantitative measurement of affinity of dye for the fibre, previously applied to wool, has been successfully extended to nylon. The procedure has been modified to permit its application to dyes with high affinity. The affinities for nylon have been measured for ten representative acid dyes. The affinity is shown to provide a quantitative basis for the explanation of competitive effects in the sorption of acid dyes by nylon from mixed solutions. C—9.

Dyeing of Nylon with Acid Dyes: Equilibria. W. R. Remington and E. K. Gladding. *J. Amer. Chem. Soc.*, 1950, 72, 2553-2559. The mechanism proposed by Gilbert and Rideal (*J. Textile Institute*, 1944, 35, A474) to explain the absorption of acids by fibrous proteins has been shown to account for the absorption of monobasic acid dyes by nylon. An acid-titration equation is obtained, and application of an appropriately rearranged form of the equation permits the graphical analysis of the equilibrium absorption data. The experimental data both for single dyes and for mixtures fit the equation in a satisfactory manner. When graphically analysed in this way, the absorption data yield a precise value for the amine-end content of the fibre, which is the practical upper limit for dyeing with acid dyes. By these procedures, the nature of the degradation of nylon by the application of excessive amounts of acid dyes from solutions of low *pH* has been elucidated. C—9.

Electrolysis of Aqueous Polyacrylic Acid in Sodium Hydroxide. J. R. Huizenga, P. F. Grieger, and F. T. Wall. *J. Amer. Chem. Soc.*, 1950, 72, 2636-2642. An investigation of the system polyacrylic acid–sodium hydroxide, with water as solvent, has been made by transference experiments using radioactive sodium tracer to determine the total flow of sodium. A considerable fraction of the sodium ions is associated with polymer over most of the range studied (0 to 100 per cent. neutralisation). The fraction of sodium ions associated increases monotonically with increase in neutralisation at constant acid concentration. With increase in neutralisation, the charge and size of the polymer ion increase and the equivalent conductance of the polymer ion goes through a maximum in the neighbourhood of 60 per cent. neutralisation. With increase in acid concentration over the range 0·015 to 0·12N., the charge and number of sodium ions on the polymer ion remain practically constant, but the polymer ion mobility decreases appreciably. The effect of finite ion exchange on transference experiments is briefly considered. C—9.

Ultra-high Speed Motion Picture Camera. M. Sultanoff. *Rev. Sci. Instrum.*, 1950, 21, 653-656. A motion picture camera which can be used at rates up to 10^9 frames per second is described. These ultra-high framing rates are obtained with a multislit focal plane shutter which is transported optically across the film plane by a rotating mirror. Each individual frame is composed of a series of lines. Shock waves close to the edge of explosive charges have been successfully photographed with the instrument. Some photographs are shown. C—9.

Carbon Arc as Infra-red Source. C. S. Rupert and J. Strong. *J. Opt. Soc. Amer.*, 1950, **40**, 455-459. The desirability of very high temperature sources for infra-red spectroscopy is pointed out. The crater radiation of the low-intensity carbon arc is examined and recommended for practical use in this application. Details of arc mounting and use are given. C—**9.**

Colour Saturation Threshold Meter. H. Haber and H. Fleck. *J. Opt. Soc. Amer.*, 1950, **40**, 459-461. A colour saturation threshold meter has been designed in which a gradually changeable mixture of white and coloured light is produced. The variability of the mixture is produced by means of double refraction. C—**9.**

Automatic Colorimeter for Cotton. D. Nickerson, R. S. Hunter, and M. G. Powell. *J. Opt. Soc. Amer.*, 1950, **40**, 446-449. An instrument for measuring the colour of cotton for grading purposes is described. The colorimeter is fully automatic and self-standardising, and graphically shows values for reflectance and yellowness on a two-dimensional chart. Illustrations showing the layout of the instrument are given. (See also *J. Textile Institute*, 1950, **41**, A424.) C—**9.**

Interference-type Low-loss Light-Filter. H. Schröder. *Naturwissenschaften*, 1948, **34**, 277 (through *Brit. Chem. Abstr.*, 1950, C., 250). A new filter based on the interference of light passing through layers of partly reflective films with a maximum light transmission of 80-90 per cent. is announced. The filter has permanent characteristics and has important applications, *e.g.*, in colour photography. It is more expensive than the conventional type and is difficult to set up. C—**9.**

Glass Standards For Spectral Transmittance: Permanence. K. S. Gibson and M. A. Belknap. *J. Opt. Soc. Amer.*, 1950, **40**, 435-437. The permanence of glass calibrating discs issued by the National Bureau of Standards (U.S.A.) for checking the photometric scale of spectrophotometers, has been investigated. Glass standards kept for 16 years with only occasional use have not changed. Data have also been obtained on the changes occurring when the standards were exposed, under glass, to daylight for periods up to three years. C—**9.**

High Intensity Ultra-violet Continuum Source for Use in Spectrophotometry. N. A. Finkelstein. *Rev. Sci. Instrum.*, 1950, **21**, 509-511. A high-intensity ultra-violet continuous spectrum d.c. source emitting between 50 and 100 times as much light as comparable commercial sources has been designed and constructed. Transitions between two molecular energy states of hydrogen are induced to produce a continuum from 1850Å to 6000Å. C—**9.**

Peptides: Optical Rotation Values. E. Brand and B. F. Erlanger. *J. Amer. Chem. Soc.*, 1950, **72**, 3314-15. The specific rotations of some alanine and lysine peptides and the residue rotations of L-alanine and L-lysine residues are reported. C—**9.**

Ultra-violet Absorption Spectrum of Tyrosine: Effect of *pH*. N. Kretchmer and R. Taylor. *J. Amer. Chem. Soc.*, 1950, **72**, 3291-92. The absorption spectra of tyrosine in the far ultra-violet region and at various *pH* values have been studied. The effect of acid and alkaline solutions on these spectra is essentially the same as that reported for the near ultra-violet region in that the addition of acid shifts the maximum towards shorter wavelengths and decreases the molecular absorption coefficient. At the half-ionisation point for the phenolic group, the observed values agree substantially with the theoretical half ionization absorption curve for tyrosine. C—**9.**

Proteins and Related Substances: Near Infra-Red Spectra. S. Mizushima, T. Shimanouchi, and M. Tsuboi. *Nature*, 1950, **166**, 406-407. Further proof for the existence of a bent or folded configuration of a polypeptide chain[1] has been obtained from the infra-red spectra of acetylglycine *N*-methyl amide, acetyl-leucine anilide, and acetyl-leucine *N*-methyl amide. In very dilute carbon tetrachloride solutions, these substances exhibit two characteristic absorption peaks, one due to the NH-group in the free state and the other arising from the NH-group involved in intramolecular hydrogen bonding. Proteins exhibit two absorption peaks arising from the hydrogen-bonded NH-groups, and in compounds containing one peptide link, such as *N*-methylacetamide, in concentrated solutions and in the liquid and solid states, two absorption peaks have been observed of practically the same frequencies of those of proteins. It is shown that the peptide bonds in the main chain of the polypeptide cannot be in the *cis*-

configuration. The appearance of more than one NH-stretching frequency cannot be used as proof of the existence of more than one type of hydrogen bond as assumed by Darmon and Sutherland[2]). ([1]*J. Textile Institute*, 1950, **41**, A150; [2]1949, **40**, A537.) C—9.

L-Threonine: Crystal Structure. D. P. Shoemaker, J. Donohue, V. Schomaker, and R. B. Corey. *J. Amer. Chem. Soc.*, 1950, **72**, 2328-2349. The crystal structure of L-threonine (*threo*-α-amino-β-hydroxy-*n*-butyric acid) has been determined by means of X-ray diffraction using Weissenberg photography with copper radiation. The Fourier analysis of the data obtained and the setting up of trial structures are described. Tables of observed and calculated structure factors are given and structural diagrams and models are shown. The crystals have an ortho-rhombic unit and molecules are held together by a three-dimensional system of hydrogen bonding. C—9.

***N*-Acetylglycine: Crystal Structure.** G. B. Carpenter and J. Donohue. *J. Amer. Chem. Soc.*, 1950, **72**, 2315-2328. The crystal structure of *N*-acetylglycine has been determined by single crystal methods. The unit cell is monoclinic and there are four molecules per unit cell. Atomic positions were determined by three-dimensional Fourier refinement, with use of structure factors obtained from visually estimated intensities on Weissenberg photographs taken with Cu $K\alpha$ radiation. A convenient analytical method for interpolating the atomic centres among the arbitrary points at which the electron density is calculated is described. The crystal is composed of nearly plane layers of acetylglycine molecules joined together by a two-dimensional network of hydrogen bonds. The molecules are essentially planar. C—9.

Protein Polypeptide Chains: Inter-atomic Distances and Bond Angles. R. B. Corey and J. Donohue. *J. Amer. Chem. Soc.*, 1950, **72**, 2899-2900. Data from recent crystal structure studies of amino-acids and peptides are used to derive values for the bond lengths and bond angles of the polypeptide chain of proteins. C—9.

Structure of Wool Fibres. ("Isolation of an α- and β-Protein in Wool.") P. Alexander and C. Earland. *Nature*, 1950, **166**, 396-397. The action of peracetic acid on wool renders it soluble in dilute alkali except for some 7–10 per cent. in the form of a continuous tubular membrane running the whole length of the fibre. The soluble component exhibits an α-keratin structure whilst the insoluble phase has a β-keratin structure. Further, conversion of the α- to the β-form may be accomplished by solution in concentrated formic acid and subsequent distillation *in vacuo*. The wool fibre is thus shown to be polyphase in character. W—9.

Wool Fibres: Polycrystalline Structure. F. Happey. *Nature*, 1950, **166**, 397-398. After treatment with peracetic acid, the protein of wool fibre can be divided into two fractions, *viz.*, (*a*) a major portion, soluble in weak alkali, and (*b*) a thin pellicle of protein, insoluble in alkali. X-ray diagrams show differences in structure of protein fractions (*a*) and (*b*). The soluble fraction (*a*) appears to be in the α-form, and the insoluble fraction (*b*) is in the β-form. A study has been made of the solution and precipitation of the soluble wool product from formic acid. Keratin dissolved in formic acid and precipitated by water gave a normal α-type diagram, and its solubility in weak alkali was unchanged; when the formic acid was removed *in vacuo*, the protein gave a β-type X-ray diagram, and was comparatively insoluble in weak alkali. Three important points which emerge from this work are discussed. These concern the cystine cross-linkages, the question of whether the crystalline part of wool fibre can be considered to be an α-protein; and the similarity of the behaviour of the protein with that of the copolymer of DL-β-phenylalanine plus glutamic γ-methyl ester. (See previous abstract.) C—9.

Cellulose Fibres: Ratio of Crystalline to Amorphous Substance. L. Flaschner. *Ann. Phys., Lpz.*, 1948, **2**, 370-392 (through *Brit. Chem. Abstr.*, 1950, C, 234). A method suitable for determining the crystalline: amorphous ratio in a series of cellulose fibres by X-ray diffraction is developed. The method is based on a comparison of the relative intensity of the background scatter from the amorphous constituent and the intensity of the X-ray interference pattern obtained from the crystalline constituent. Monochromatic radiation is employed and the camera is evacuated to avoid air-scatter. With Bemberg fibre, the concentration of the crystalline constituent is estimated as 13–23 per cent.; this figure is below

the value of 20–25 per cent., which Hermans *et al.* have given for viscose fibres on the basis of density measurements. C—9.

X-Ray Diffraction by "Amorphous" Polymers. P. H. Hermans and A. Weidinger. *J. Polymer Sci.*, 1950, 5, 269-281. Radial intensity distribution curves of isotropic monochromatic X-ray exposures of various non-crystalline and partly crystalline polymers are quantitatively evaluated, corrected for incoherent radiation, and reduced to standard conditions of intensity and irradiated mass. It is shown that the intensity distribution curves thus reduced actually show constant integrated intensity within experimental error, irrespective of the atomic composition of the polymer. Amorphous cellulose exhibits by far the largest degree of disordering of all polymers investigated. It is suggested that in polymers consisting of only carbon, hydrogen, oxygen, and nitrogen, the occurrence of a coherent background intensity in the range of diffraction angles of 35° and upward is indicative of hydrogen bonding in the non-crystalline portion. In halogen-containing polymers, detection of hydrogen bonding in this way is impossible, owing to intermolecular interferences between halogen atoms of adjacent molecules. C—9.

X-Ray Diffraction by "Amorphous" Polymers: A Correction. P. H. Hermans and A. Weidinger. *J. Polymer Sci.*, 1950, 5, 518. Attention is drawn to a printing error in the authors' paper published in *J. polymer Sci.*, 1950, 5, 269-281 (cf. preceding abstract). C—9.

Electron Microscope: Determination of Magnification. R. S. Pease. *J. Sci. Instrum.*, 1950, 27, 182-186. A brief account is given of some investigations on the usual method of determining the magnification of an electron microscope, *i.e.*, by measuring the size of an image given by an object of known dimensions. Another method of magnification determination is also described in which the specimen is moved a known distance, and the corresponding image movement is measured. This method is free from the limitations of the usual procedure. C—9.

Electron Microscope Observations of Certain Protein Fibrils. J. H. Highberger, J. Gross, and F. O. Schmitt. *J. Amer. Chem. Soc.*, 1950, 72, 3321-22. An electron microscope examination has been made of a protein obtained from macerated, phosphate-extracted animal skins by extraction with citrate buffer at *pH* 4. Some new fibrillar structures have been observed, electron micrographs (chromium shadowed) of two of which are shown. C—9.

RCA Electron Microscope: Molecular Diffraction Attachment. B. O. Heston and P. R. Cutter. *Rev. Sci. Instrum.*, 1950, 21, 608-612. A new device for the distribution of vapours across an electron beam for molecular diffraction studies, is described. The attachment is designed to fit an RCA electron microscope. The vapours are ejected from a circular crest of a diffusion box immediately surrounding the beam to give a heavy concentration of vapours in contact with the beam while releasing only a small amount of vapour. The method has been standardised with the well-known patterns of carbon tetrachloride and tetrabromide, the diffraction patterns and microphotometer charts of which are shown. C—9.

Electron Microscopy of Crystalline Edestin. C. E. Hall. *J. Biol. Chem.*, 1950, 185, 45-51. The structure of crystalline edestin has been studied by means of electron microscopy. It is concluded that the lattice is face-centred cubic, and this is confirmed by X-ray diffraction studies. The molecular weight calculated from the observed diameter of the molecule agrees with that deduced from ultra-centrifugal data. An electron micrograph of the surface of an edestin crystal is shown, together with a model of the structure. C—9.

Unbonded Strain Gauge. S. Baxter and H. A. Vodden. *J. Sci. Instrum.*, 1950, 27, 187-188. Constructional details are given for an unbonded strain gauge in which the resistance wires themselves take the load. The calibration curve of a typical gauge is shown and a nomogram for ease of gauge design is given. C—9.

New Vacuum Gauge. R. Havens, R. Koll, and H. LaGow. *Rev. Sci. Instrum.*, 1950, 21, 596-598. A new vacuum gauge has been developed that is capable of measuring pressures from one atmosphere down to less than 10^{-5} mm. of mercury. The gauge works on the principle that an a.c. signal can be obtained from a normal d.c. pressure gauge by cyclically changing the pressure at a given frequency. The construction of the instrument is described and experimental results are given. C—9.

Electrical Conductivity of Thin Films: Measurement by Glass Detector. R. W. Kear. *J. Sci. Instrum.*, 1950, **27**, 204. Details are given for the construction of a glass detector for measuring the electrical conductivity of thin films. This consists of a small Pyrex glass thimble into the closed end of which two metal electrodes are embedded. By means of these electrodes the conductivity of a thin film, condensed on the surface of the thimble, is measured. The electrodes are also used as a thermocouple so that the temperature at which the measurement takes place may be determined. The detector has been used as a dew-point instrument in the investigation of condensation phenomena in boiler-plant flue gases. C—9.

Insulating Materials: Measurement of Electrical Resistance. R. H. Norman. *J. Sci. Instrum.*, 1950, **27**, 200-202. Means of overcoming some difficulties encountered in the measurement of the resistance of insulating materials by electrometer methods, are described. Methods of measurement are considered (for resistances up to about 10^{16} ohms) particularly those involving guarded electrodes. Some non-standard items of equipment are described and details about the routine use of a Lindemann electrometer are also given. C—9.

Capacitive Heating. ("Heating by Means of High-Frequency Fields.") M. Stel and E. C. Witsenburg. *Philips Tech. Rev.*, 1950, **11**, 232-240. Capacitive heating is based on the dielectric losses occurring in a dielectric situated in an alternating electric field. A formula is derived for the amount of heat generated per unit of time in a homogeneous dielectric. Two simple cases of a non-homogeneous dielectric can be regarded as the parallel and series connection, respectively, of two homogeneous dielectrics. Generators for capacitive heating are briefly considered and some important applications (*e.g.*, manufacture of thermosetting plastics and of plywood, and the gluing of wood) are discussed. C—9.

Viscosity and Sedimentation of Linear Macromolecules Exhibiting Partial Solvent Immobilisation. A. Peterlin. *J. Polymer Sci.*, 1950, **5**, 473-482. Various formulæ set up for viscosity and sedimentation of linear macromolecules that take into account hydrodynamical interaction are compared and their extensive agreement is stated. By plotting the observed $[S]$ and $M/[\eta]$ values (where $[S]$ is the sedimentation constant, M the molecular weight, and $[\eta]$ the intrinsic viscosity of the macromolecule) against $\sqrt{M}$, straight lines are obtained. The slope gives the effective length of the molecule. The respective formulæ are given and applied to various polymers. C—9.

Rheological Equations of State: Formulation. J. G. Oldroyd. *Proc. Roy. Soc.*, 1950, **A, 200**, 523-541. The invariant forms of rheological equations of state for a homogeneous continuum, suitable for application to all conditions of motion and stress, are discussed. The right invariance properties can most readily be recognised if the frame of reference is a co-ordinate system convected with the material, but it is necessary to transfer into a fixed frame of reference in order to solve the equations of state simultaneously with the equations of continuity and of motion. An illustration is given of the process of formulating equations of state suitable for universal applications, based on non-invariant equations obtained from a simple experiment or structural theory. Anisotropic materials, and materials whose properties depend on previous rheological history, are included within the scope of the paper. C—9.

Finite Strains in an Anisotropic Elastic Continuum. J. G. Oldroyd. *Proc. Roy. Soc.*, 1950, **A, 202**, 345-358. The discussion in a previous paper (see preceding abstract), on the invariance properties required of the equations of state of a homogeneous continuum, is extended by taking into account thermodynamic restrictions on the form of the equations, in the case of an elastic solid deformed from an unstressed equilibrium configuration. The general form of the finite strain-stress-temperature relations, expressed in terms of a free-energy function, is deduced without assuming that the material is isotropic. As a simple illustration of the derivation and use of equations of state involving anisotropic physical constants, the torsion of an anisotropic cylinder is discussed briefly. C—9.

Wool: The Sub-Cuticle Membrane; A Recently Discovered Morphological Component of the Fiber. P. Alexander and C. Earland. *Text. Res. J.*, 1950, **20**, 298-300. A membrane, which may be identical with the "sub-cutis" described by Lehmann, has been obtained by treating wool with peracetic acid. After more than 90 per cent. of the cystine has been oxidised with this reagent,

the wool becomes freely soluble in dilute ammonia, except for a resistant fraction which represents between 7 per cent. and 10 per cent. of the wool substance and which is in the form of a membrane. The membrane is continuous, runs along the whole length of the fibre, and there are no scale edges or any lateral markings. It is resistant to chlorine solutions of any *pH*, indicating that it does not consist of scales held together by non-protein epicuticle. Experiments on the constitution of the membrane by means of paper chromatography have shown that it contains no cystine, but some cysteic acid. Otherwise it contains all the amino acids present in the wool fibre, but not in the same proportions. Two photomicrographs are included. W—9.

Wool: Relation between Damage and the Structure of the Fibre. E. H. Mercer and L. Roadknight. *Text. J. Austral.*, 1950, **25**, 440-2. The structure of the wool fibre is described, including information resulting from recent investigations on the cuticle of the fibre. W—9.

Wool: Action of Chlorine Dioxide. D. B. Das and J. B. Speakman. *J. Soc. Dyers & Col.*, 1950, **66**, 583-588. The treatment of extracted Lincoln wool with chlorine dioxide in the dark is described. The cystine content of the wool decreased and about a quarter of the sulphur was oxidised ultimately to sulphuric acid and cysteic acid. Hydrolysates of wool thus treated were examined chromatographically and contained much cysteic acid but no cystine and little, if any, tyrosine. The aspartic acid content was larger than that of untreated wool. It is suggested that colour changes observed in the early stages of treatment were due to oxidation of tyrosine side-chains to the corresponding *o*-quinone. The regain of treated wool was less than that of untreated wool. Fibres contracted during treatment with chlorine dioxide and, especially, during subsequent release in boiling water. Results of X-rays conform with the supercontraction measurements. W—9.

Dyeing: Investigation of the Relationship Between Amount of Dye Used and Colour Sensation obtained and its possible Application in Textile Dyeing. See Section 4I. W—9.

10—ECONOMICS

Egyptian Textile Industry: Present Position. R. Gasche. *Egypt. Cotton Gaz.*, 1950, **9**, 49-53. The Egyptian textile industry is faced with a crisis of which the decisive factors are surplus home production, an imposed and uneconomical raw material(*i.e.*, cotton), and the high cost of labour. The author discusses the situation and suggests remedies. The steps that have been taken by the Egyptian Government are considered. C—10.

World Cotton Situation During First Half of the 1949–50 Season. D. Windel. *Egypt. Cotton Gaz.*, 1950, **9**, 33-38. The prospects of the 1949-50 season world production of cotton are briefly reviewed and figures are given (by countries) showing world stocks at July 31st, 1949 and forecast world production for 1949-50. World consumption of commerical cotton is very briefly considered under North America, South America, Europe, and Asia. World commercial cotton consumption figures of various countries for the 1948-49 and 1949-50 seasons are compared. The world price of raw cotton is being kept artificially high for two basic reasons; (i) the high support prices established by the Government of the U.S.A., and (ii) the comparative scarcity of cottons grown outside U.S.A. C—10.

Egyptian Cotton Trade: Aspects of Economic Development. N. Koestner. *Egypt. Cotton Gaz.*, 1950, **9**, 23-32. The author first makes some general observations on the economic thought and policies of the present day with respect to the affairs of Egypt. The exports of cotton from Egypt to various countries during the period from 1890 to the present day are analysed and comment is made on the changes that have taken place. Reasons for the decline in importance of the British market are suggested. Monthly cotton yarn production figures for various countries are compared and discussed for the years 1937 and 1948. Finally the monetary relations of Egypt with the outside world are briefly considered. C—10.

Cotton Supplies in Indian Union: Forecast Shortage. K. Sawhney. *Indian Fmg.*, 1950, **11**, 39-42. An analysis of the expected figures for the consumption of cotton in the Indian Union during 1949 and 1950, and of the supplies

available, shows that the carry-over stocks for 1949-50 and 1950-51 will be negligible. Immediate steps which could be taken to remedy this, and also long-term policies, are briefly considered. **C—10.**

Food or Fabric? R. W. Moncrieff. *Text. Merc.*, 1950, 123, 806, 809. Many of the fibres that are offered as substitutes for wool are made from edible materials, and this aspect of the subject is discussed with special reference to food shortages. The fibres mentioned are "Lanital", "Aralac", "Fibrolane", "Vicara", and "Ardil". Details are given of some similarities between these fibres and wool. The author does not consider that the new fibres are likely to replace wool, but that they have a definite use in admixture with wool and speculates upon possible sources of materials for man-made protein fibres. **W—10.**

12—CONFERENCES AND EXHIBITIONS

International Silk Congress. ("The Future of Silk.") E. W. Goodale. *Hosiery Times*, 1950, 23, (260), 71-2. Report of press conference; surveys the work of the International Silk Congress, held recently in New York. **H—12.**